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Health Statistics Quarterly

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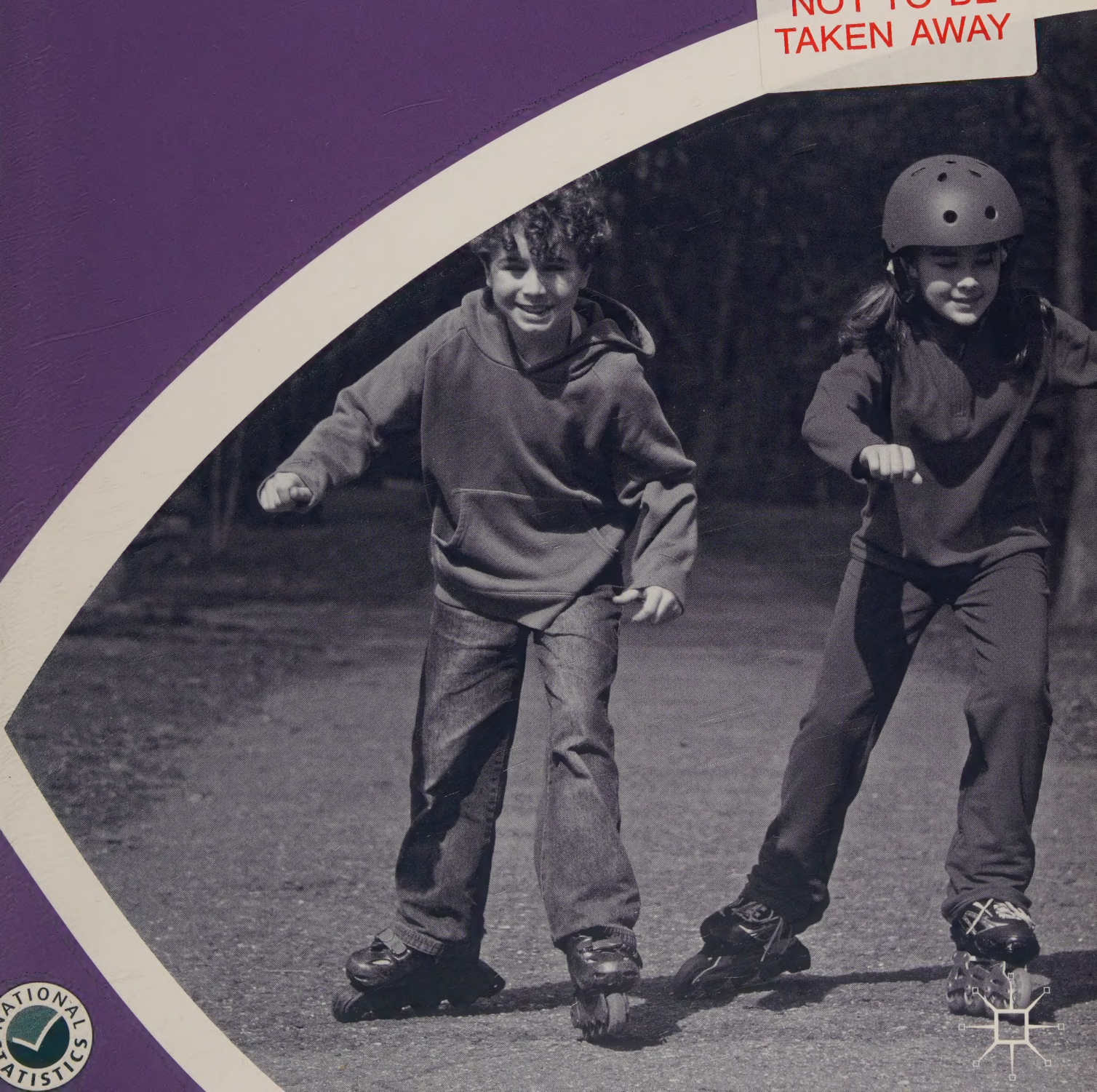

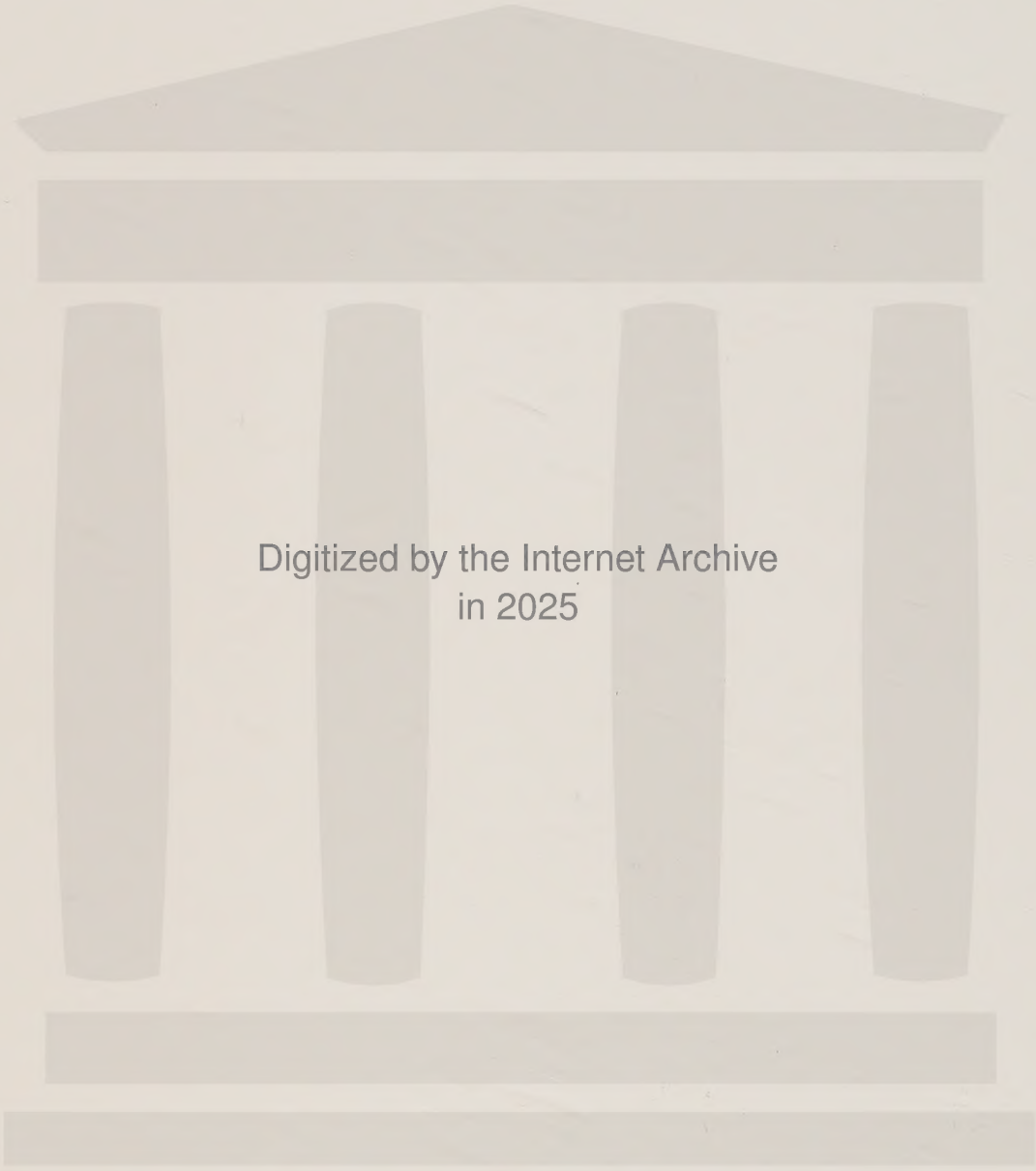

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Health Statistics Quarterly

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Population Trends	by 23 Oct	by 2 Feb	by 4 May	by 26 July

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GE112
1 Myddleton Street
London
EC1R 1UW

in brief

Social Trends 39

Social Trends brings together a wide range of statistics on many aspects of contemporary UK society and how it has changed over the years. *Social Trends 39* was published on 15 April 2009 by the Office for National Statistics (ONS). The underlying theme of this edition is households, families and children.

Key points from the health chapter include:

Immunisation
In 2006/07, 86 per cent of children in the UK were immunised against measles, mumps and rubella (MMR) by their second birthday. This was a slight rise from 84 per cent in 2001/02 but below the peak of 90 per cent in 1991/92. Concerns over the safety of the MMR vaccine led to the fall in the 1990s.

Cancer
The incidence of prostate cancer among men in England rose 51 per cent between 1996 and 2006, to 30,000 incidences. In 1998 prostate cancer overtook lung cancer as the most commonly diagnosed cancer among men.

Breast cancer is the most commonly diagnosed form of cancer among women in England. Incidence increased by 21 per cent between 1996 and 2006 to 38,000. This increase is partly explained by increases and improvements in breast cancer screening services.

Smoking
Since 1974 there has been a substantial decline in the proportion of adults aged 16 and over in Great Britain who smoke cigarettes. In 1974 more than one-half (51 per cent) of men aged 16 and over and more than two-fifths (41 per cent) of women were smokers. By 2007 these proportions had more than halved to 22 per cent of men and 20 per cent of women.

Obesity
In recent years the proportion of the adult population in England who are obese has increased. Between 1997 and 2007 the proportion of men aged 16 and over who were classified as obese increased from 17 per cent to 24 per cent, while among women the proportion rose from 20 per cent to 24 per cent. In 2007, a further 41 per cent of men and 32 per cent of women were classified as overweight; overall, 65 per cent of men and 56 per cent of women were classified as either overweight or obese.

An increasing proportion of children are also overweight or obese. The number of two to 15 year old boys in England who were classified as overweight or obese increased from 26 per cent in 1997 to 31 per cent in 2007. For girls of the same age the corresponding figures were 26 per cent and 30 per cent.

Diet
Access to a healthy diet is partly linked to household income. In general, the higher the level of weekly household income, the more likely men and women are to meet the recommendation to eat five or more portions of fruit and vegetables per day. In England in 2007, 34 per cent of men and 36 per cent of women living in households in the top income quintile group consumed five or more portions of fruit and vegetables per day compared with 20 per cent of men and 25 per cent of women in the bottom quintile group.

Sexual health
There were 205 diagnosed cases of chlamydia per 100,000 men and a rate of 198 per 100,000 women in 2007 in the UK. This was the largest increase in the rate of new diagnoses of sexually transmitted infections (STIs) since 2000, when there were 104 cases of chlamydia per 100,000 men and 128 per 100,000 women.

The number of diagnoses of chlamydia among young people aged 16 to 24 doubled from 447 per 100,000 population in 1998 to 1,102 per 100,000 population in 2007. Chlamydia has been the most commonly diagnosed STI among young people since 2000.

The report is available on the Office for National Statistics website at:
www.statistics.gov.uk/socialtrends39

Social Trends 39
Palgrave Macmillan, £52.00
ISBN 978-0-230-22050-8

Available by calling
01256 302611 or online at
www.palgrave.com/ons

Cancer survival in England

Figures for cancer survival in England, 2001–06, were published by ONS on 20 March 2009, on the ONS website. These data update those published in December 2008 for 2000–04. They have been produced in collaboration between the London School of Hygiene and Tropical Medicine and the National Cancer Intelligence Centre, ONS.

The report presents one- and five-year survival for adults from 21 common cancers in patients resident in England, diagnosed during 2001–06 and followed up to the end of 2007. These cancers comprise over 90 per cent of all newly diagnosed cases.

These new data are also presented in comparison with data from patients diagnosed in 2000–04 and followed up in 2005. Survival rates for most of the 21 common cancers improved in England, but declined for bladder and Hodgkin's disease, over the period 2001–07 compared with 2000–05. The report is available on the Office for National Statistics website at:
www.statistics.gov.uk/statbase/Product.asp?vlnk=14007

Expenditure on Health Care in the UK 1997–2007

The UK spent £118 billion on health care in 2007, according to the latest data published by ONS on 29 April 2009. This includes public and private spending on health care, and is 8.4 per cent of Gross Domestic Product (GDP).

ONS is able to publish these internationally comparable data for the first time since 2003, as a result of recent work by Health England (the national reference group for health and well-being in England).

The article is available on the Office for National Statistics website at: www.ons.gov.uk/about-statistics/ukcemga/publications-home/publications/index.html

Centre for Health Analysis and Life Events

There has been a further reorganisation to ONS statistical directorates to that announced in *Health Statistics Quarterly* 39. The Centre for Health Analysis and Reporting now incorporates the work of the Life Events team and has been renamed the Centre for Health Analysis and Life Events (CHALE). It is managed by Tricia Dodd, reporting to Guy Goodwin as Executive Director for Population, Health and Regional Analysis.

Currently CHALE has staff in Newport, Titchfield and London (Myddelton Street). The existing relocation plans will be completed by the end of 2009, with all posts then in Newport and Titchfield.

Correction to data in Table 4.1

Minor corrections have been made to the data in Table 4.1 in this issue of *Health Statistics Quarterly*; some of the quarterly rates for September and December 2006 that appeared in editions 39 to 41 have been amended by very small amounts, ranging from 0.1 to 0.3 conceptions per 1,000 women in age group.

Recent and forthcoming ONS releases

Recent releases

26 March
Marriages, divorces and adoptions 2006 (FM2 no. 34)
www.statistics.gov.uk/statbase/Product.asp?vlnk=581

26 March
Population Trends No. 135 Spring 2009
www.statistics.gov.uk/statbase/Product.asp?vlnk=6303
Print copies available from Palgrave Macmillan 01256 357893

31 March
Mortality statistics: childhood, infant and perinatal 2006 (DH3 no. 40)
www.statistics.gov.uk/statbase/Product.asp?vlnk=6305

31 March
National population projections by marital status, 2006-based
www.statistics.gov.uk/statbase/Product.asp?vlnk=14491

15 April
Social Trends No. 39 2009 edition
www.statistics.gov.uk/statbase/Product.asp?vlnk=5748
Print copies available from Palgrave Macmillan 01256 302611

23 April
Deaths registered in England and Wales by area of usual residence
www.statistics.gov.uk/statbase/Product.asp?vlnk=15229

23 April
Key population and vital statistics 2007 (VS no. 34, PP1 no. 30)
www.statistics.gov.uk/statbase/Product.asp?vlnk=539

23 April
Population estimates by ethnic group (experimental), mid-2007
www.statistics.gov.uk/statbase/Product.asp?vlnk=14238

30 April
Marital status estimates, mid-2002 to mid-2007 marital status estimates adjusted to include marriages abroad
www.statistics.gov.uk/statbase/Product.asp?vlnk=15107

20 May
Migration quarterly report May 2009
www.statistics.gov.uk/statbase/Product.asp?vlnk=15230

20 May
Quarterly population estimates (experimental), quarter 1 2009
www.statistics.gov.uk/statbase/Product.asp?vlnk=601

21 May
Birth summary tables, 2008
www.statistics.gov.uk/statbase/Product.asp?vlnk=14408

Forthcoming releases

28 May
Quarterly conceptions to women under 18, quarter 1 2008
www.statistics.gov.uk/statbase/Product.asp?vlnk=15055

24 June
Regional Trends No. 41 2009 edition
www.statistics.gov.uk/statbase/Product.asp?vlnk=14356
Print copies available from Palgrave Macmillan 01256 302611

25 June
Population Trends No. 136 Summer 2009
www.statistics.gov.uk/statbase/Product.asp?vlnk=6303
Print copies available from Palgrave Macmillan 01256 357893

9 July
Annual Abstract of Statistics 2009 edition
www.statistics.gov.uk/statbase/Product.asp?vlnk=94
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Health indicators

England and Wales

Figure A Population change (mid-year to mid-year)

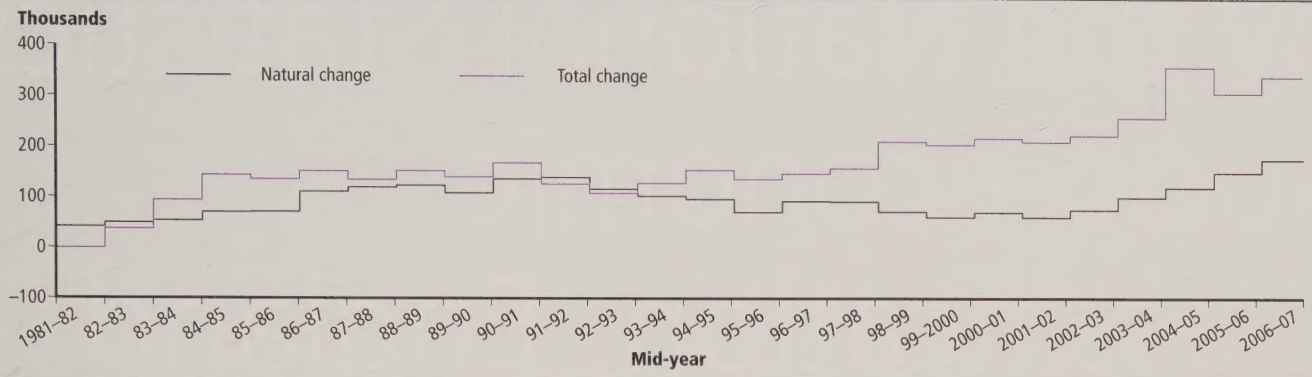


Figure B Age-standardised mortality rate[1]

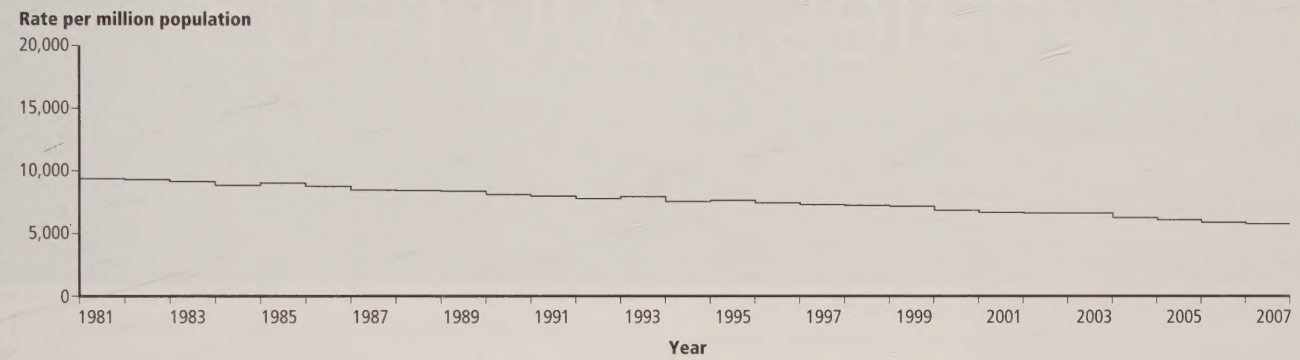


Figure C Infant mortality (under 1 year)

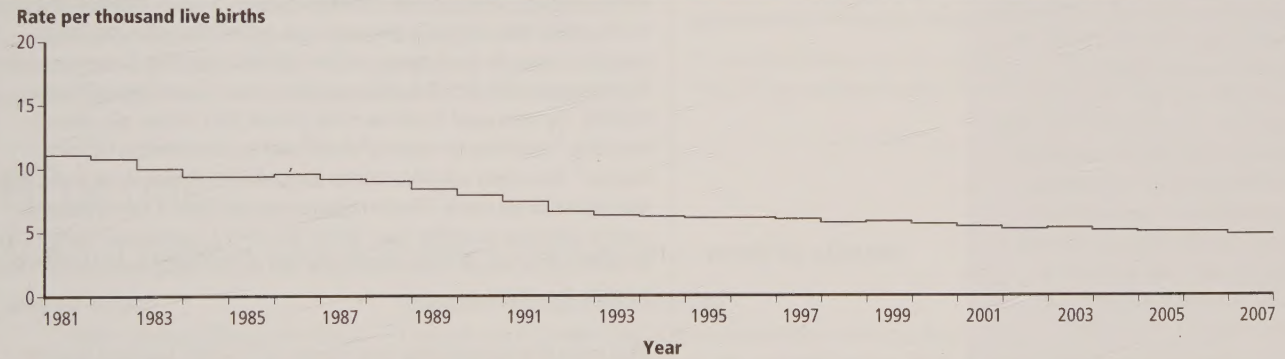
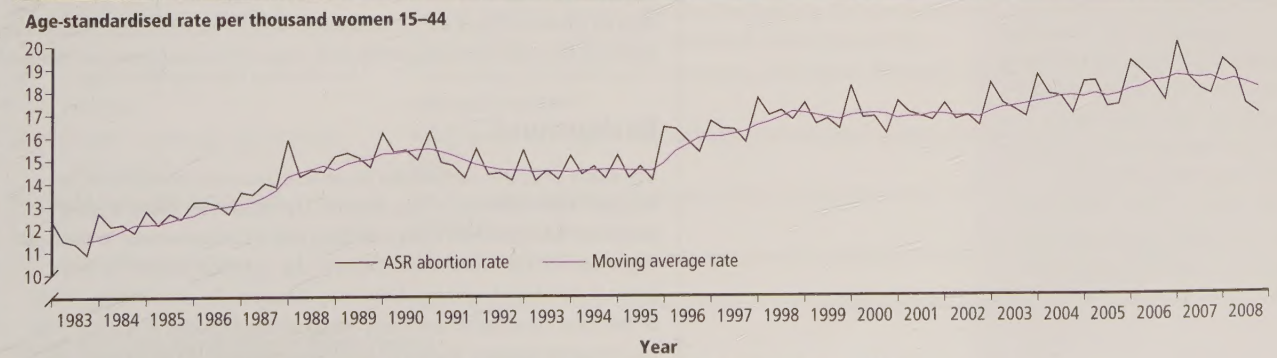


Figure D Age-standardised quarterly abortion rates – residents[2]



1 The age-standardised mortality rate for 2007 is based on mid-2007 population estimates published on 21 August 2007.

2 Rates for 2008 are based on projected projections.

Social inequalities in adult female mortality by the National Statistics Socio-economic Classification, England and Wales, 2001–03

Ann Langford and
Brian Johnson
Office for National Statistics

This analysis of mortality in women aged 25–59 in 2001–03 found that those in the least advantaged social economic class had a mortality rate around twice that of women in the most advantaged class. This article uses the National Statistics Socio-economic Classification (NS-SEC) and examines the relative merits of classification based on a woman's 'own' occupation as opposed to a 'combined' classification which also takes into account the husband's NS-SEC class, where available. The results demonstrate a strong socio-economic gradient in mortality for adult women under both classification methods. Under the 'combined' classification, women in the least advantaged NS-SEC class had a mortality rate 2.6 times that of those in the most advantaged class. Based on the women's 'own' occupation, the comparable ratio was 1.9. These results set a benchmark for the future monitoring of socio-economic mortality inequalities in women, and also provide a comparison between inequalities affecting women and men.

Introduction

This article describes social inequalities in the all-cause mortality rates by socio-economic classification for women aged 25–59 in England and Wales in the period 2001–03. It is the fourth in a series of articles measuring mortality using the final version of the National Statistics Socio-economic Classification (NS-SEC). Earlier articles covered social inequalities by NS-SEC for men aged 25–64 over the period 2001–03 for all-cause mortality,[1] mortality by cause of death[2] and by Government Office Region.[3] This study adopts a similar methodology to that described in the first article in the series.[1] Death registrations and 2001 Census data are used to calculate mortality rates while, the ONS Longitudinal Study (LS) is used both to adjust for known biases and to provide a comparator to help validate the results.

This is the first time that the final version of NS-SEC has been used to analyse female mortality rates, and this article discusses the alternative methods of assigning women to an occupation-based classification and the effect on resultant mortality rates. Results are presented both for NS-SEC derived from a woman's own occupation, and for a combined classification based on the most advantaged NS-SEC class of a woman and her husband.

Background

The study of health inequalities by socio-economic classification in England and Wales has a long history. The influential Black Report[4] identified that there had been a striking lack of improvement in the health experience of the lower social classes. The Acheson Report[5] in 1998 again highlighted widening differences between the expectation of life of the most advantaged and most disadvantaged groups in society. The Government strategy *Tackling Health Inequalities: A Programme for*

Action[6] aspired to 'address the inequalities that are found across different geographical areas, between genders … and between different social and economic groups'. The subsequent *2007 Status Report on the Programme for Action*[7] reported that 'the gap has not narrowed for life expectancy in disadvantaged areas; indeed, the gap has widened, particularly for women.'

The interest in health inequalities has led to a large volume of literature on the analysis of mortality by socio-economic classification,[8,9,10,11] most of which focuses on male mortality. This is due, in part, to a number of well known difficulties inherent in any analysis of female mortality by a classification based on occupation. There are conceptual difficulties because many women have weaker ties to the labour market than men, which reduces the potential effectiveness of basing socio-economic class on occupation. There are also practical difficulties, since on the death registers a substantial minority of female occupations are either inadequately described or, in many cases, not recorded at all. This would be the case for instance if a woman was solely recorded as a 'housewife' at death, or had been unoccupied at death and had previously worked only in a part-time capacity.[12]

As a result of these difficulties, methods have been developed to classify women according to a 'family' or 'household' measure. The conventional approach for many years was to use the husband's social class for married women, and a classification based on a woman's own occupation for all other women.[13] More recent studies have used an 'individualistic' approach where social class is based on the woman's occupation alone.[14] It can be argued that this latter approach is more suitable in a society where more married women work and where fewer people get married. This approach also has the advantage of conceptual clarity, since it avoids the difficulties of 'combining two gender-differentiated occupational structures'.[14]

An alternative 'dominance' approach was suggested by Erikson.[15] In this approach a woman's classification is determined by considering both the woman's own class, and her husband's. The most advantaged class is then chosen to represent the woman's socio-economic class, on the basis that the life-chances of individuals in a family unit are more likely to be aligned with that of the most advantaged individual in that unit.

Despite the difficulties, there have been some studies of inequalities in female mortality rates. The Black Report[4] revealed that the death rate for women in the most disadvantaged social class was two-and-a-half times higher than the comparable rates for women in the most advantaged social class. Subsequent studies[11,16] reported similar inequalities for the 1990s, with women in social classes IV and V having a mortality rate approximately one-and-a-half times that of women in classes I and II. An ONS study of life expectancies by social class[17] confirmed this pattern of inequality among women, reporting a fairly consistent two to three year advantage for non-manual compared to manual classes over the last thirty years.

Most of the above mentioned studies use the Registrar General's Social Class based on occupation. This was replaced for the purposes of official statistics in 2001 by the new NS-SEC classification, following a review of social classifications undertaken by the Economic and Social Research Council.[18] Both the 2001 Census and death registrations post-2001 used NS-SEC as their socio-economic classification. This article is the first to analyse inequalities in mortality among women according to this new schema.

The National Statistics Socio-economic Classification

The Registrar General's Social Class was the principal social classification used in the UK during the 20th century. While it provided continuity, it was criticised for lacking a coherent theoretical basis and insensitivity to the changing patterns of industry and employment in modern economies.[19] The non-manual/manual divide inherent in the classification was seen as increasingly irrelevant to modern service economies and did not identify the unique position of the non-professional self-employed.[20] It was also seen as increasingly inappropriate to the classification of women by occupation, as for example 'the manual/non-manual divide has little relevance for women's jobs'.[21]

To address these criticisms, the National Statistics Socio-economic Classification (NS-SEC) was developed. The conceptual basis of the NS-SEC is the structure of employment relations operating in modern developed economies.[20] Occupations are differentiated in terms of reward mechanisms, promotion prospects, autonomy and job security. The most advantaged NS-SEC classes (for example higher managerial and professional occupations), typically exhibit personalised reward structures, have good opportunities for advancement, have relatively high levels of autonomy within the job, and are relatively secure. These attributes tend to be reversed for the most disadvantaged classes (for example, routine occupations). Box One shows the NS-SEC analytical class breakdowns used in this analysis, and provides examples of the occupations included in each class.

Box A1 in the Appendix shows the operational version of NS-SEC and the various aggregated versions in use. This study will use the eight analytic class version (seven occupied classes and the 'other' group), and will also present age-standardised mortality rates for the five and three class versions.

Further information on the rationale, derivation and application of the NS-SEC is available on the Office for National Statistics website.[22]

Box one

National Statistics Socio-economic Classification – analytic classes

Analytic class		Examples of occupations included
1	Higher managerial and professional occupations	Directors and chief executives of major organisations, civil engineers, medical practitioners, IT strategy and planning professionals, legal professionals, architects, senior officials in national and local government
2	Lower managerial and professional occupations	Teachers in primary and secondary schools, quantity surveyors, public service administrative professionals, social workers, nurses, IT technicians
3	Intermediate occupations	Graphic designers, medical and dental technicians, Civil Service administrative officers and local government clerical officers, counter clerks, school and company secretaries
4	Small employers and own account workers	Hairdressing and beauty salon proprietors, shopkeepers, dispensing opticians in private practice, farmers, self-employed decorators
5	Lower supervisory and technical occupations	Bakers and flour confectioners, catering supervisor, head waitress, postal supervisor, sales assistant supervising others
6	Semi-routine occupations	Retail assistants, catering assistants, clothing cutters, dressmaker, traffic wardens, veterinary nurses and assistants, shelf fillers
7	Routine occupations	Hairdressing employees, floral arrangers, sewing machinists, bar staff, cleaners and domestics
	Other	Full-time students, never worked, long-term unemployed, inadequately described, not classifiable for other reasons

Source: NS-SEC User Manual, Office for National Statistics

Analytical approach

In order to estimate mortality rates by NS-SEC it is necessary to estimate a set of numerators and denominators. There are two approaches that can be used:

- a cross-sectional approach: where numerators and denominators are both derived for a particular time period using unlinked sources of data, or
- a longitudinal approach: where a cohort is observed through time, and mortality rates are calculated for various sub-populations such as socio-economic classes

This study uses a cross-sectional approach with numerators derived from death registrations and denominators from 2001 Census data. The advantage of this approach is that it makes maximum use of the available data. The disadvantage is that serious numerator-denominator biases can exist if the two sources are not aligned. The ONS Longitudinal Study (LS) was used to quantify the biases, and calculate appropriate adjustment factors which were obtained in a similar manner to that used in the first article in the series, relating to male mortality.[1] The LS was also used to act as a comparator for the results.

There is a substantial degree of under-reporting of the occupations of women at death. In the age range 25–59, around 42 per cent of women are not assigned to an NS-SEC occupied class at death. This is partly because the death registers only record a woman's last full-time occupation if not in employment at the time of death.[12] According to the 2001 Census, 28 per cent of women in this age group were economically inactive, and a further 29 per cent were part-time workers. In both cases it is possible that the woman left full-time employment many years previously and therefore that the information on her last full-time occupation was either not seen as relevant or perhaps not known by informants. The LS was used to construct a sample of women who were assigned an occupied NS-SEC class at the Census, but not classified at death. From this sample, suitable adjustments to the NS-SEC classification at death could be made.

Owing to the difficulties associated with the socio-economic classification of women, a number of options were examined. Ultimately it was decided that the following classification schemes would be used:

- woman's '**own**' NS-SEC based on her current or last occupation as recorded on the census or death register, and
- a '**combined**' classification where the most advantaged of the woman's NS-SEC class and that of her husband was used. If a woman was not married then her own classification was used

The 'combined' classification method is a variant of Erikson's 'dominance' rule[15] whereby a member of a household is classified by the person in the household who is 'dominant' in the labour market. So, for example, if a woman is classified to a routine occupation herself (NS-SEC class 7) and her husband is self-employed (NS-SEC class 4) then she would be deemed to belong to NS-SEC class 4. Approximately 60 per cent of women were married and assigned to either their own class or their husband's according to which was the most advantaged. The remaining 40 per cent of non-married women were classified according to their own occupation.

The terminology 'own' and 'combined' will be used to refer to these two approaches to classification. The rationale for opting for these two approaches is explained in more detail in the Discussion section of this article.

Methods

Data sources

The raw data for the numerators were deaths of women aged 25–59 occurring in 2001–03 obtained from death registrations. This source included occupational details for both the woman and her spouse, if she was married or widowed, but not for a 'partner'. The denominators were based on the 2001 Census, and ONS mid-year population estimates for 2001–03. The LS was used to quantify and correct for potential biases. The LS contains linked census and vital event data for one per cent of the population of England and Wales. Information from the 1971, 1981, 1991 and 2001 censuses has been linked together, along with information on events such as births, deaths and cancer registrations.

Deriving population denominators

Mid-year population estimates 2001–03 by NS-SEC

The proportions of the population in each NS-SEC class and five-year age group at the 2001 Census were applied to the three mid-year population estimates to obtain the estimates of population by NS-SEC for the period 2001–03. This process was analogous to that used for men in the first article of this series.[1] Special census tables were commissioned in order to compute the proportions by NS-SEC for the 'combined' classification.

Population numbers (rounded to thousands) by age group and NS-SEC class from the 2001 Census are shown in Appendix Table A1 and the equivalent estimates for 2001–03 using the ONS mid-year population estimates are shown in Table A2, for both the 'own' and 'combined' rule classifications.

Denominator adjustments

The denominators were subject to two adjustments. Firstly an adjustment was calculated to account for the Filter X rule.[1] This rule was applied at the 2001 Census and, as a consequence, all people who had not worked since 1996 were allocated to the residual category 'not classifiable for other reasons'. When occupations were recorded on the death registers, no such time limit was applied: this difference in recording is likely to cause bias if not corrected. The LS was used to estimate the effect of this rule and calculate correction factors. (More details of this methodology can be found in Appendix Box A2.)

The second adjustment was to compensate for the effect of health selection. This phenomenon is well documented,[8,23,24] and is a particular problem for mortality analysis. The hypothesis is that health status influences social position, leading to a selection out of the labour market of those in poor health, which may disproportionately affect occupied NS-SEC class denominators. The LS, by linking data between censuses, makes it possible to obtain the previous occupation of a person who was in an unoccupied class in 2001 by reference to the 1991 Census. The proportions of those unoccupied at 2001 assigned to each NS-SEC class in 1991, allows the calculation of adjustment factors for the denominator. (More details of this methodology can be found in Appendix Box A2.)

The adjustments described above are based on a sample of 132,304 women from the LS and follow the methodology described in the analysis of male mortality rates by NS-SEC in the first article in this series.[1] The final adjusted 'optimised population estimates' using both classification rules described above ('own' and 'combined') are shown in Table 1.[43]

Table 1 Optimised population estimates[1] (person years at risk) by NS-SEC and age, women aged 25–59, 2001–03

England and Wales

Thousands

Age (years)	NS-SEC analytic class									
	1	2	3	4	5	6	7	FTS[2]	Others[3]	Total
'Own' classification										
25–29	484	1,420	954	133	263	836	449	205	314	5,059
30–34	552	1,592	1,118	259	322	1,136	613	126	297	6,014
35–39	513	1,628	1,136	346	346	1,296	661	98	261	6,284
40–44	407	1,502	1,024	348	318	1,212	616	69	214	5,710
45–49	317	1,383	913	332	292	1,061	565	38	178	5,078
50–54	259	1,300	976	372	305	1,164	651	17	159	5,203
55–59	189	1,060	913	358	292	1,169	731	10	151	4,874
Total	2,722	9,885	7,034	2,149	2,137	7,873	4,286	563	1,573	38,221
Percentage	*7.1*	*25.9*	*18.4*	*5.6*	*5.6*	*20.6*	*11.2*	*1.5*	*4.1*	*100.0*
'Combined' approach										
25–29	724	1,528	846	187	318	688	365	182	221	5,059
30–34	1,062	1,780	886	354	411	803	427	95	198	6,014
35–39	1,175	1,865	855	464	456	811	423	64	172	6,284
40–44	1,049	1,719	764	468	440	722	367	44	137	5,710
45–49	895	1,570	681	452	400	618	319	25	117	5,078
50–54	831	1,532	724	528	429	680	358	11	110	5,203
55–59	655	1,316	703	508	437	734	403	8	112	4,874
Total	6,391	11,309	5,459	2,960	2,891	5,055	2,661	429	1,067	38,221
Percentage	*16.7*	*29.6*	*14.3*	*7.7*	*7.6*	*13.2*	*7.0*	*1.1*	*2.8*	*100.0*

1 Adjusted for 2001 Census 'Filter X' rule and health selection.
2 Full-time students.
3 Others includes never worked, long-term unemployed, inadequately described, not classifiable for other reasons.
Source: Office for National Statistics, 2001 Census (custom table provided by ONS Census Division), mid-year population estimates for 2001, 2002 and 2003, ONS Longitudinal Study

Table 2 Percentage distributions of population by NS-SEC from different data sources, women aged 25–59

England and Wales

Percentages

NS-SEC analytic class	'Own' classification				'Combined' approach			
	Census[1]	LS[2]	LS[3]	Optimised[4]	Census[1]	LS[2]	LS[3]	Optimised[4]
1 Higher managerial and professional	6.8	6.8	7.1	7.1	16.3	16.7	17.0	16.7
2 Lower managerial and professional	24.0	23.9	25.6	25.9	28.3	28.2	29.4	29.6
3 Intermediate	16.3	16.3	18.1	18.4	13.0	12.8	13.9	14.3
4 Small employers and own account workers	5.2	5.3	5.7	5.6	7.7	7.9	7.9	7.7
5 Lower supervisory and technical	4.8	4.9	5.6	5.6	7.0	7.2	7.7	7.6
6 Semi-routine	17.1	17.3	20.2	20.6	11.4	11.5	13.0	13.2
7 Routine	8.2	8.4	10.8	11.2	6.0	6.0	6.7	7.0
Full-time students	1.5	1.4	1.4	1.5	1.1	1.1	1.0	1.1
Other[5]	16.1	15.8	5.5	4.1	9.3	8.7	3.2	2.8
	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

1 Census adjusted by mid-year population covering period 2001–03.
2 ONS Longitudinal Study based on 2001 classification of NS-SEC covering period 2001–05, applying the 'Filter X' rule.
3 ONS Longitudinal Study based on 2001 classification of NS-SEC covering period 2001–05, (fully coded, ie without the 'Filter X' rule).
4 Optimised population estimates.
5 Other includes never worked, long-term unemployed, inadequately described, not classifiable for other reasons.
Source: Office for National Statistics, 2001 Census (custom table provided by ONS Census Division), mid-year population estimates for 2001, 2002 and 2003, ONS Longitudinal Study

A comparison of the NS-SEC distribution of the 2001 Census adjusted by the mid-year population estimates, the optimised population estimates and for comparison purposes the LS is shown in Table 2 for both NS-SEC classification rules. This shows that under both 'own' and 'combined' rules, the optimised population percentage distribution is similar to that of the fully coded LS. In the case of the 'own' NS-SEC classification approach those classified as never worked, long-term unemployed, not classified or inadequately described reduced from 16 per cent to 4 per cent as a result of these adjustments. For the 'combined' approach the corresponding reduction was from 9 per cent to 3 per cent.

Deriving numerators

There were 65,276 deaths to women aged 25–59 recorded on the death registers over the three-year period 2001–03, and 920 deaths on the LS sample which covered a four-and-a-half year period. There were two adjustments made to the numerators, one for misallocation between NS-SEC classes 2 and 3, and one for the under-recording of occupation on the death registers.

Misallocation between NS-SEC classes 2 and 3

As for the analysis of men, an examination of the LS data revealed that there was an apparent misallocation between two of the NS-SEC analytical categories at death registration. A number of individuals with occupations such as 'Personal assistants and other secretaries' have been recorded at death as 'Intermediate clerical and administrative', part of NS-SEC class 3, on the basis that they had no supervisory role. However, subsequent examination of their employment status at census indicated that they were supervisors and hence at census would have been allocated to 'Higher Supervisory', part of NS-SEC class 2. In the death registration

process someone's employment status is assumed to be 'employee' where there is insufficient information to classify them otherwise. It therefore appears likely that those individuals in the LS sample with the same occupation code at death and at the census, and who were described as supervisors at census, should have been coded to class 2. Appropriate adjustment factors were calculated from the LS data and applied to the numbers of deaths in classes 2 and 3.

Numerator adjustment for under-recording by occupation

Only 58 per cent of women aged 25–59 were assigned an occupied NS-SEC class at death in the period 2001–03. Of the women not assigned to an occupied class, 59 per cent were married, of which 93 per cent to men in occupied classes. When the 'combined' method is used, and the spouse's NS-SEC is taken into account, 19 per cent of women were still not assigned an occupied NS-SEC at death (The probable reasons for this are given above under 'Analytical approach').

As a result of this shortfall in classification, the LS sample was used to estimate the NS-SEC distribution of those who were 'not classified' at death but had an occupied classification at the census. The first part of Table 3 shows this distribution when women are classified by their own NS-SEC. It can be seen that the majority of those in the LS sample unclassified at death, had an occupied classification at the census. The distribution in Table 3 was used to reallocate the unclassified numerators among the classified groups as appropriate. The second part of Table 3 shows the analogous distribution using the 'combined' rule for the classification.

Table 4[43] shows the adjusted death counts used as numerators for this analysis, using both the 'own' NS-SEC and the 'combined' rules of classification. Table 5 compares the percentage distribution of deaths by NS-SEC on the death registers (pre- and post-adjustments) with distributions of deaths on the LS as classified at death, and at the 2001 Census.

Table 3 **NS-SEC class at Census for those members of the LS who died 2001–05 and were not classified or inadequately described at death**

England and Wales — Numbers and percentages

	NS-SEC analytic class								
	1	2	3	4	5	6	7	Other and FTS[1]	Total
'Own' classification in the 2001 Census									
Number	7	24	56	16	25	87	80	85	380
Percentage	*2*	*6*	*15*	*4*	*7*	*23*	*21*	*22*	*100*
'Combined' approach in the 2001 Census									
Number	6	12	19	7	14	32	22	46	158
Percentage	*4*	*8*	*12*	*4*	*9*	*20*	*14*	*29*	*100*

1 Other and FTS includes never worked, long-term unemployed, inadequately described, not classifiable for other reasons and full-time students.
Source: ONS Longitudinal Study

The distribution of deaths pre-adjustments is very similar to that of the sample members of the ONS Longitudinal Study (LS), based on occupation recorded at death. Both show approximately 42 per cent in an unoccupied classification when a woman's own occupation is used, and approximately 20 per cent when the husband's occupation is taken into consideration using the 'combined' rule. The effect of the adjustments was to move proportionately more deaths to the more disadvantaged classes. For example, the adjustments caused the number of deaths in the routine occupations class to more than double under the 'own' classification, while the number of deaths in the higher managerial and professional class increased by about a quarter. The distribution of deaths after adjustments is much closer to that seen for the LS sample members' 2001 Census classification. This provides part validation for the adjustments made, since they were applied solely to those who were assigned to an unoccupied class at death.

Table 4 **Adjusted deaths[1] by NS-SEC and age, women aged 25–59, 2001–03**

England and Wales — Numbers and percentages

Age (years)	NS-SEC analytic class									
	1	2	3	4	5	6	7	FTS[2]	Others[3]	Total
'Own' classification										
25–29	84	326	304	45	82	409	237	70	188	1,745
30–34	134	615	522	92	167	693	427	52	321	3,023
35–39	212	985	768	164	268	1,089	615	49	484	4,635
40–44	305	1,429	1,115	282	384	1,618	943	33	657	6,765
45–49	398	2,193	1,562	431	658	2,430	1,391	28	932	10,022
50–54	500	3,600	2,612	737	1,007	3,861	2,284	14	1,464	16,080
55–59	708	3,947	3,710	1,440	1,372	4,979	4,607	9	2,235	23,006
Total	2,340	13,094	10,594	3,192	3,937	15,080	10,504	255	6,280	65,276
Percentage	*3.6*	*20.1*	*16.2*	*4.9*	*6.0*	*23.1*	*16.1*	*0.4*	*9.6*	*100.0*
'Combined' approach										
25–29	144	326	263	80	106	351	219	64	192	1,745
30–34	288	629	435	177	223	569	359	46	298	3,023
35–39	505	1,042	604	312	396	805	531	33	406	4,635
40–44	777	1,518	868	523	572	1,192	832	20	463	6,765
45–49	1,140	2,301	1,191	837	971	1,748	1,211	20	604	10,022
50–54	1,701	3,952	1,926	1,487	1,614	2,673	1,963	7	758	16,080
55–59	2,377	5,155	2,605	2,346	2,646	3,858	3,048	6	966	23,006
Total	6,930	14,922	7,893	5,762	6,527	11,196	8,163	196	3,687	65,276
Percentage	*10.6*	*22.9*	*12.1*	*8.8*	*10.0*	*17.2*	*12.5*	*0.3*	*5.6*	*100.0*

1 Death registrations adjusted for under-recording of occupation at death and misallocation between NS-SEC classes 2 and 3.
2 Full-time students.
3 Others including never worked, long-term unemployed, inadequately described, not classifiable for other reasons.
Source: Office for National Statistics, death registrations 2001–03, ONS Longitudinal Study

Table 5 Number and percentage distribution of deaths by NS-SEC, women aged 25–59, death registrations 2001–03 and LS sample 2001–05

England and Wales

Numbers and percentages

NS-SEC analytic class	Death registrations				Longitudinal Study			
	Unadjusted		Adjusted[1]		At death		At 2001 Census	
	Number	Percentage	Number	Percentage	Number	Percentage	Number	Percentage
NS-SEC using 'own' classification								
1 Higher managerial and professional	1,857	*2.8*	2,340	*3.6*	30	*3.3*	38	*4.1*
2 Lower managerial and professional	10,151	*15.6*	13,094	*20.1*	147	*16.0*	183	*19.9*
3 Intermediate	7,680	*11.8*	10,594	*16.2*	116	*12.6*	156	*17.0*
4 Small employers and own account workers	2,107	*3.2*	3,192	*4.9*	25	*2.7*	52	*5.7*
5 Lower supervisory and technical	2,106	*3.2*	3,937	*6.0*	28	*3.0*	54	*5.9*
6 Semi-routine	8,700	*13.3*	15,080	*23.1*	119	*12.9*	201	*21.8*
7 Routine	4,975	*7.6*	10,504	*16.1*	61	*6.6*	130	*14.1*
Other	27,699	*42.4*	6,535	*10.0*	394	*42.8*	106	*11.5*
Total	65,276	*100.0*	65,276	*100.0*	920	*100.0*	920	*100.0*
NS-SEC using the 'combined' approach								
1 Higher managerial and professional	6,470	*9.9*	6,930	*10.6*	104	*11.3*	112	*12.2*
2 Lower managerial and professional	13,246	*20.3*	14,922	*22.9*	168	*18.3*	214	*23.3*
3 Intermediate	7,191	*11.0*	7,893	*12.1*	103	*11.2*	125	*13.6*
4 Small employers and own account workers	5,225	*8.0*	5,762	*8.8*	57	*6.2*	78	*8.5*
5 Lower supervisory and technical	5,453	*8.4*	6,527	*10.0*	68	*7.4*	81	*8.8*
6 Semi-routine	8,742	*13.4*	11,196	*17.2*	132	*14.3*	151	*16.4*
7 Routine	6,476	*9.9*	8,163	*12.5*	84	*9.1*	85	*9.2*
Other	12,473	*19.1*	3,883	*5.9*	204	*22.2*	74	*8.0*
Total	65,276	*100.0*	65,276	*100.0*	920	*100.0*	920	*100.0*

1 Incorporates adjustments to death counts for classes 2 and 3, and for under-recording of occupation at death (see Methods).
Source: Office for National Statistics, death registrations 2001–03, ONS Longitudinal Study

Outcome measures

To compare the mortality experience of NS-SEC classes, two measures of mortality were calculated for each classification method: age-specific mortality rates for five-year age groups, and directly age-standardised mortality rates standardised to the European standard population (Appendix Table A3). Age-standardised rates have also been produced for the five class analytic NS-SEC and the 'condensed' three class NS-SEC.

Results

Using women's 'own' NS-SEC classification

The age-standardised mortality rates are displayed in Table 6 and in Figure 1 for classification of women based on their 'own' NS-SEC only.

Table 6 Age-standardised mortality rates[1] by NS-SEC using 'own' NS-SEC classification, women aged 25–29, 2001–03

England and Wales

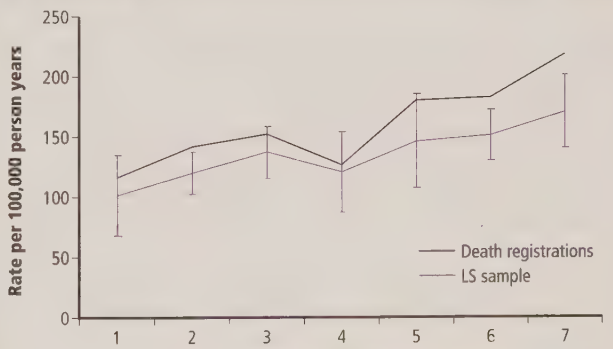
Rates per 100,000

NS-SEC analytic class	Mortality rate	Lower 95 per cent confidence interval	Upper 95 per cent confidence interval
1 Higher managerial and professional	116	99	134
2 Lower managerial and professional	142	133	150
3 Intermediate	152	138	166
4 Small employers and own account workers	127	108	146
5 Lower supervisory and technical	181	148	214
6 Semi-routine	183	168	198
7 Routine	220	198	242
Ratio of classes 7:1	1.89	1.61	2.21

1 Rates are directly standardised using the European standard population. Numerators and denominators have been adjusted as described in article.
Source: Office for National Statistics, death registrations 2001–03, optimised population estimates (see Table 1), ONS Longitudinal Study

Figure 1 Age-standardised mortality rates[1] by NS-SEC, using 'own' classification, women aged 25–59, 2001–03

England and Wales



1 Directly age-standardised rates using the European standard population.
Death registration rates calculated from death registrations 2001–03, including adjustments, and optimised population estimates (see Methods).
LS rates calculated from the ONS Longitudinal Study 2001–05.
Source: Office for National Statistics, death registrations 2001–03, optimised population estimates (see Table 1), ONS Longitudinal Study

Figure 1 shows an increase in mortality rates as NS-SEC class becomes less advantaged. The ratio of mortality rates between the least and most advantaged NS-SEC class was 1.9 indicating that mortality rates for women in routine occupations was almost twice that of women in higher managerial and professional occupations. The exception to the pattern of steadily increasing mortality rates occurred for women who are small employers or own account workers. These women experienced a mortality rate which was not statistically significantly different from that experienced by women in higher managerial and professional occupations.

Table 7 Age-standardised mortality rates[1] by five class NS-SEC using 'own' NS-SEC classification, women aged 25–59, 2001–03

England and Wales — Rate per 100,000

NS-SEC five class schema	Mortality rate	Lower 95 per cent confidence interval	Upper 95 per cent confidence interval
1 Managerial and professional (1, 2)	137	130	144
2 Intermediate (3)	152	138	166
3 Small employers and own account workers (4)	127	108	146
4 Lower supervisory and technical (5)	181	148	214
5 Semi-routine and routine (6, 7)	197	186	207

1 Rates are directly standardised using the European standard population. Numerators and denominators have been adjusted as described in article.

Source: Office for National Statistics, death registrations 2001–03, optimised population estimates (see Table 1), ONS Longitudinal Study

Table 8 Age-standardised mortality rates[1] by three class NS-SEC using 'own' NS-SEC classification, women aged 25–59, 2001–03

England and Wales — Rate per 100,000

NS-SEC three class schema	Mortality rate	Lower 95 per cent confidence interval	Upper 95 per cent confidence interval
1 Managerial and professional (1, 2)	137	130	144
2 Intermediate (3, 4)	145	134	157
3 Routine and manual (5, 6, 7)	194	185	204

1 Rates are directly standardised using the European standard population. Numerators and denominators have been adjusted as described in article.

Source: Office for National Statistics, death registrations 2001–03, optimised population estimates (see Table 1), ONS Longitudinal Study

Figure 1 also shows age-standardised rates calculated solely on the basis of the LS. The LS, which is based on a 1 per cent sample of the population, also shows a gently rising pattern of mortality as disadvantage increases, although the rates were generally lower for each class.

Tables 7 and 8 show age-standardised mortality rates for five and three class versions of NS-SEC. Both tables demonstrate an increase in mortality with increasing disadvantage. 'Small employers and own account workers' were again an exception to this rule, as this class seemed to experience similar mortality rates to 'Managerial and professional' women. The 'Routine and manual' class (Table 8) had statistically significantly higher mortality rates than the other classes in the three class version. The ratio of mortality rates of the 'Routine and manual' class to the 'Managerial and professional' class was 1.4.

Age-specific mortality rates are displayed in Figure 2. The routine occupations class had a higher mortality rate than the other classes for all age groups. The difference between the rates for the routine and the semi-routine occupations classes was relatively small up to the age of 50–54 but was statistically significantly greater at age 55–59. Overall, the socio-economic gradients, (ratio between the least and most advantaged classes), declined with age from around three for those aged 25–29 to less than two for those aged 55–59 (Appendix Table A4).

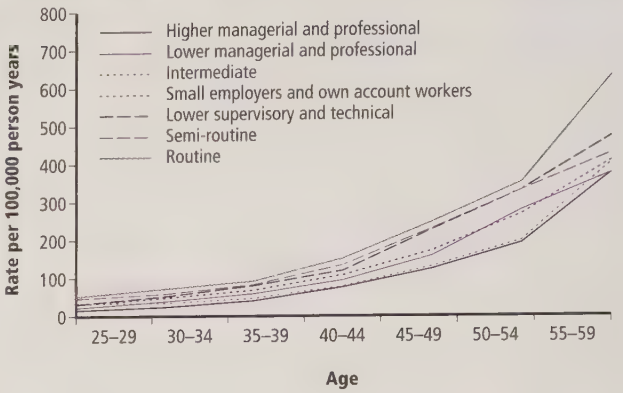
Mortality rates before the adjustment for under-recording of occupation at death can be seen in Appendix Table A5 and Figure A1.

Using the 'combined' rule for NS-SEC classification

The results are displayed in Table 9 and in Figure 3 for classification of women based on NS-SEC allocated using the 'combined' rule for classification.

Figure 2 Age-specific mortality rates[1] by five-year age groups and 'own' NS-SEC, women aged 25–29, 2001–03

England and Wales



1 Numerators and denominators have been adjusted as described in article.

Source: Office for National Statistics, death registrations 2001–03, optimised population estimates (see Table 1), ONS Longitudinal Study

Table 9 Age-standardised mortality rates[1] by NS-SEC using the 'combined' approach, women aged 25–59, 2001–03

England and Wales — Rate per 100,000

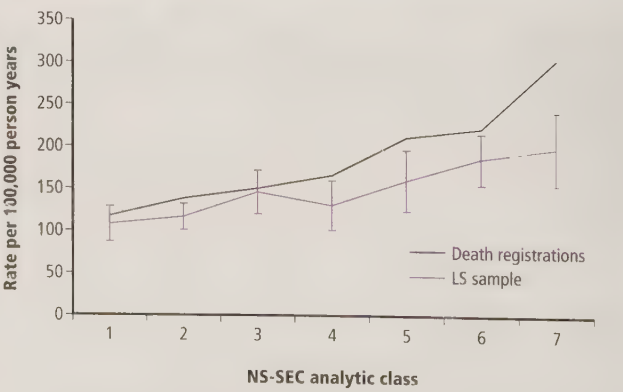
NS-SEC analytic class	Mortality rate	Lower 95 per cent confidence interval	Upper 95 per cent confidence interval
1 Higher managerial and professional	118	111	124
2 Lower managerial and professional	137	132	142
3 Intermediate	149	137	161
4 Small employers and own account workers	165	152	179
5 Lower supervisory and technical	210	192	229
6 Semi-routine	221	205	236
7 Routine	302	277	328
Ratio of classes 7:1	2.57	2.33	2.83

1 Rates are directly standardised using the European standard population. Numerators and denominators have been adjusted as described in article.

Source: Office for National Statistics, death registrations 2001–03, optimised population estimates (see Table 1), ONS Longitudinal Study

Figure 3 Age-standardised mortality rates[1] by NS-SEC, using the 'combined' approach, women aged 25–29, 2001–03

England and Wales



1 Directly age-standardised rates using the European standard population.
Death registration rates calculated from death registrations 2001–03, including adjustments, and optimised population estimates (see Methods).
LS rates calculated from the ONS Longitudinal Study 2001–05.

Source: Office for National Statistics, death registrations 2001–03, optimised population estimates (see Table 1), ONS Longitudinal Study

Figure 3 shows mortality rates increasing as disadvantage increases, each mortality rate is higher than the rate for more disadvantaged classes. The three most disadvantaged classes had statistically significantly higher mortality rates than the other more advantaged classes. Those assigned to routine occupations (NS-SEC class 7) had a particularly high mortality rate. Under this classification scheme, this class consists of two main groups:

- women whose own occupation assigns them to the routine occupations class and, if married, have husbands who also are either classified to routine occupations or are unoccupied, and
- women who are themselves unoccupied and married to a husband assigned to the routine occupations class

Figure 3 also compares these mortality rates with age-standardised rates calculated solely on the basis of the LS. The LS showed a similar rising pattern of mortality, but the estimated mortality rate for those classified to routine and semi-routine occupations at death was again statistically significantly higher than that found using the LS alone.

Tables 10 and 11 show age-standardised mortality rates for the three and five class versions of NS-SEC. Both tables show an increase in mortality with disadvantage, with most classes having statistically significantly higher mortality than the previous class. The 'Routine and manual' class (Table 11) had a markedly worse mortality rate than the other classes. The difference between the 'Routine and manual' class and the 'Intermediate' class was much greater than that between the 'Intermediate' class and the 'Managerial and professional' class. The ratio of mortality rates of the 'Routine and manual' class to the 'Managerial and professional' class was 1.8.

Table 10 **Age-standardised mortality rates[1] by five class NS-SEC using the 'combined' approach, women aged 25–59, 2001–03**

England and Wales — Rate per 100,000

NS-SEC five class schema	Mortality rate	Lower 95 per cent confidence interval	Upper 95 per cent confidence interval
1 Managerial and professional (1, 2)	130	126	134
2 Intermediate (3)	149	137	161
3 Small employers and own account workers (4)	165	152	179
4 Lower supervisory and technical (5)	210	192	229
5 Semi-routine and routine (6, 7)	249	237	261

1 Rates are directly standardised using the European standard population. Numerators and denominators have been adjusted as described in article.

Source: Office for National Statistics, death registrations 2001–03, optimised population estimates (see Table 1), ONS Longitudinal Study

Table 11 **Age-standardised mortality rates[1] by three class NS-SEC using the 'combined' approach, women aged 25–59, 2001–03**

England and Wales — Rate per 100,000

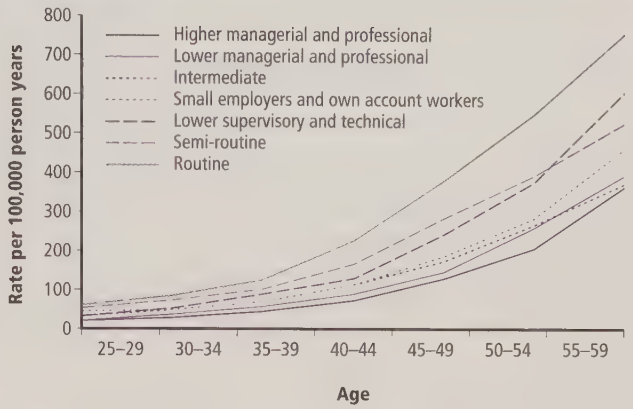
NS-SEC three class schema	Mortality rate	Lower 95 per cent confidence interval	Upper 95 per cent confidence interval
1 Managerial and professional (1, 2)	130	126	134
2 Intermediate (3, 4)	156	147	164
3 Routine and manual (5, 6, 7)	238	229	247

1 Rates are directly standardised using the European standard population. Numerators and denominators have been adjusted as described in article.

Source: Office for National Statistics, death registrations 2001–03, optimised population estimates (see Table 1), ONS Longitudinal Study

Figure 4 **Age-specific mortality rates[1] by five-year age groups and NS-SEC using 'combined' NS-SEC classification, women aged 25–59, 2001–03**

England and Wales



1 Numerators and denominators have been adjusted as described in article.

Source: Office for National Statistics, death registrations 2001–03, optimised population estimates (see Table 1), ONS Longitudinal Study

Age-specific mortality rates using the 'combined' rule are displayed in Figure 4. Those classed as lower supervisory and technical, semi-routine and routine, the so-called 'labour contract' classes, had higher mortality rates for all age groups above 30–34. Absolute differences between these and the more advantaged groups increased with age. There was less evidence of a decline in socio-economic gradients with age, relative to the 'own' classification (Appendix Table A6).

Mortality rates before the adjustment for under-recording of occupation at death can be seen in Appendix Table A7 and Figure A2.

Discussion

This study presents two sets of results, one using women's 'own' NS-SEC classification, and one using a 'combined' classification. Both suggest substantial socio-economic inequalities in the mortality rate of women of working age. The ratio of the mortality rate of the least advantaged class to the most advantaged, or 'gradient' was 1.9 using women's own class, and 2.6 using the 'combined' approach.

The 'own' and 'combined' approaches can be viewed as reflecting two conceptually distinct causal mechanisms which are potentially equally useful depending upon the research question of interest. The 'combined' approach best reflects household social and economic resources which will be of interest in relation to health inequalities among women. Women's own occupational class is a truer reflection of the employment relations experience of women, and so may be more useful in making comparisons between men and women.

There have been relatively few studies of female mortality by occupation-based socio-economic class in England and Wales. Direct comparison of the figures from the current study using NS-SEC with those using social class is not possible but the results presented here can be put in the context of earlier work. Estimates were published in the ONS *Health Inequalities Decennial Supplement*,[16] suggesting a mortality rate ratio of 1.55 for social classes IV and V relative to classes I and II for women aged 35–64 in the period 1986–92. A later study[11] showed a value of 1.41 for the corresponding ratio in the period 1997–99. Both studies were based on the LS, and used a hierarchical approach to classification, whereby the woman's own classification was used if available, and the spouse's classification was used if the woman was in an unoccupied class.

Women's 'own' NS-SEC class

As stated in the Methods section, only 58 per cent of women within the age range studied, whose deaths occurred in the period 2001–03, were classified to an occupation. Estimates obtained using women's own NS-SEC class are sensitive to any adjustment made to the numerators (numbers of deaths by class). The effect of the adjustment for the under-recording of death is substantial, although based on information from a relatively small sample of 380 deaths from the LS. (Appendix Table A5 and Figure A1 show the mortality rates prior to the adjustment.) The effect is to alter the mortality rate ratio of the least to most advantaged class from 1.2 to 1.9. The adjustment reduces the potential bias but the effect of using a small sample is to increase substantially the confidence intervals associated with the age-standardised estimates, particularly for the least advantaged classes. Despite these wider confidence intervals, the mortality rates produced show a clear gradient, with higher managerial and professional workers having a statistically significantly lower mortality rate than those in intermediate occupations who, in turn, have a statistically significantly lower rate than those for semi-routine and routine occupations.

The mortality rates produced were also similar to those obtained purely on the basis of the LS (Figure 1). However, routine and semi-routine occupations both had statistically significantly higher mortality rates than those based on the LS alone. A similar pattern was found in the analysis of male mortality by NS-SEC[1] where rates obtained for routine occupations using death registrations and adjusted census-based denominators were also found to be substantially higher than those based on the LS alone.

The principal reason for the difference in the two analyses was the difference in coding of the classes at census and at death. The LS analysis sample was classified according to the 2001 Census. There was a potential health selection effect whereby many of those in poor health were classed at the census as being long-term unemployed or not classified for other reasons. This typically produces a downward bias on the socio-economic gradient in the period immediately following classification.[24] More importantly, in the context of this study, was the difference in treatment at census and at death of the 'labour contract' classes and of routine occupations in particular. Within the occupied classes, there were 151 LS sample members allocated to routine occupations at death, compared to only 120 at the census. This implies a greater chance of 'demotion' to the routine occupations class at death than 'promotion' from it. A similar, but smaller, effect exists for semi-routine occupations. The effect of this was to depress the relative gradient of the LS mortality rates, based on the census classification, compared with the main estimates which were based on death registrations.

The results presented here suggest a strong relationship between mortality rates and own occupation-based class for women. By comparison, a study which examined the LS for the period 1971–81[25] found that although own social class (at the level of manual/non-manual) did have some discriminatory power for both single and married women, factors such as husband's class, car ownership and tenure were better discriminators of mortality rates for married women.

It is possible that social changes since the 1970s have increased the validity of own occupation-based class as a measure of the socio-economic status of women relative to alternative indicators. In studies of societies where a higher proportion of women are in employment than in the UK, inequalities in mortality based on own occupation are substantial[26] and (for non-married women), 'at least as large as men's'.[27]

The results presented here seem broadly consistent with other studies of health inequalities in women using their own NS-SEC as a classification schema. One study[28] based on the General Household Survey suggested class differences in self-reported health as 'clearly evident for women based on their own occupation', with a socio-economic gradient between the least and most advantaged groups of approximately 2.5 times. Another study[29] of women aged 16–60 in the period 1986–96, using the interim NS-SEC classification, found a mortality risk ratio of approximately 1.5 for women in routine occupations relative to those in higher managerial and professional occupations.

Using the 'combined' rule to assign women to a NS-SEC class

The concept underlying this approach is that a person may be classified by their family or household class position. Erikson[30] summarised the idea as follows: 'A secretary who is married to an executive may have life chances closer to those of executives than to those of other secretaries.' To use this approach it is necessary to assume that NS-SEC, although based on the employment relations status of an individual, can be used as a proxy for the life chances of their spouse or other members of their household.

Support for the household-based approach can be found in a study[31] which examined a selection of individual and household measures of social position as explanatory factors for self-rated health. For the economically active, it found that an individual's own NS-SEC class was the strongest predictor, while for the economically inactive, NS-SEC class derived according to the subject's last occupation was a less strong predictor of health than a household-based measure (the Cambridge scale[32]). This is consistent with an earlier study which found significant variation in mortality rates among 'unoccupied' women according to husband's social class.[25] Since many married women who have no occupation are classed as economically inactive this suggests that a household-based approach is preferable for an analysis of married women. Further support for the household-based approach can be found in a study[29] of mortality over the period 1986–96. It found that 'general social advantage of the household' was more important as a predictor of mortality in women aged 16 to 60 than the own NS-SEC class of the women.

Other authors, however, have had concerns about the use of a family- or household-based measure. Some[33,34,35] are concerned that socio-economic inequality between men and women may be hidden, or that the increase in divorce over time may have invalidated the assumption that everyone in the family unit benefits equally from the household class position. Another author[36] concluded from a study using Finnish data that the advantages of cross-classifications between own and spouse's socio-economic characteristics were 'very limited'. There is, however, considerable support for schemas involving the use of a family-based classification.[15,29]

Although by convention the husband's socio-economic class has been used as a proxy for household classification in the case of married women,[13] this has been controversial.[21,37] In addition, an examination of LS data for 2001 does not support this approach. Where both spouses are classified to an occupied NS-SEC class, the most advantaged classification is held by wives in 31 per cent of cases and by husbands in 47 per cent of cases (in the remaining 22 per cent of cases, both spouses have the same class). Thus selection of the husband's class to represent the socio-economic position of the household would be misleading for a substantial minority of households.

The 'combined' rule used in this study is based on Erikson's 'dominance' approach. This is similar to the 'gender neutral household class measure' recommended by other authors[38] for epidemiological studies of class inequalities. The authors propose a measure based on the most dominant individual level occupational class position of the woman and all adults in the household. In the current study it was not possible to implement this approach fully, as the death registers did not record the occupational details of a partner, nor any other adults in the household. However, it was possible to construct a measure based on a woman's occupation and her husband's.

Several options are available for rules determining the most advantaged classification of the husband and the wife in a household. One suggested

hierarchy[20] for this purpose, based on Erikson's approach,[15] places self-employment above employment (even employment as a manager or professional). A more straightforward approach is to deem the member of the household with the most advantaged NS-SEC class to be the class representative person for the household, and this was the method adopted for the combined approach.

The 'dominance' approach has been advocated as being a more effective discriminator of class differences in mortality for both men and women than an individual or 'own' approach.[30] The results presented here suggest that the 'combined' approach distinguishes well between classes when the three or five class schema is used. Each mortality rate was higher than that of the preceding class, and statistically significantly higher for all but one class. This was not the case when a woman's 'own' NS-SEC classification was used. Under the 'combined' approach, the estimated mortality rate ratio between the least and most disadvantaged class was statistically significantly greater than that found using women's 'own' NS-SEC class.

In contrast to the 'own' approach, women in the small employers and own account workers class had a statistically significantly higher mortality rate than those in managerial and professional occupations. This is partly because a high proportion of the married women whose occupation assigned them to this class were married to men in the managerial and professional classes and consequently assigned a different class under the 'combined' approach.

The approach is sensitive to the adjustments made to compensate for the under-recording of occupation on the death registers, but less so than the approach using 'own' NS-SEC class. The adjustment changes the resultant socio-economic gradient from 2.2 to 2.6.

As for the 'own' approach, the LS analysis suggests a lower gradient than the main estimates (Figure 3). Health selection was a less important factor for the combined approach, since a high proportion of women in the study were assigned their husband's class. As found for the 'own' approach, within the occupied classes, there was a higher propensity for an LS member to be 'demoted' to routine occupations at death from other classes at the census, than the propensity to be 'promoted' from that class. This tended to depress the relative gradient resulting from the longitudinal analysis since the latter was based on the census classification.

Marital status

Marital status is a consideration in the interpretation of the results. According to census data, the proportion of 'not married' women aged 25–59 increased from 18 per cent in 1981 to around 40 per cent in 2001. In addition, the proportion of women aged 25–59 who are economically active increased from around 60 per cent in 1981 to 72 per cent in 2001. Under the 'combined' classification, married and non-married women are treated differently. This may hide systematic differences in mortality rates based on marital status. Appendix Figure A3 shows mortality rates by NS-SEC for single women, for married women using their 'own' class, for married women using the 'combined' approach, in addition to the overall results for the 'own' and 'combined' approaches.

Figure A3 suggests that there is a steeper socio-economic gradient for single than for married women using their 'own' classification. This is consistent with a study using the LS over the period 1976–81[25] which found that socio-economic differences were greater for single women than for occupied married women using their 'own' class. Another study,[16] examining the period 1986–92, estimated that for women in manual classes who were not married, 'mortality is 70 per cent higher than their non-manual counterparts'.

Figure A3 also suggests that under the 'combined' approach, married women had similar mortality rates to all women, except for NS-SEC class 7 (routine occupations). Over 75 per cent of this group consisted of women who were not assigned an occupied class and whose husband was classified to NS-SEC class 7. This is also consistent with a previous LS study[25] which found that the group of women classified as not in paid employment and married to men in manual social classes had the highest mortality rate of any combination of cross-classifications, except for where both spouses are not classified to an occupation.

Further work is required to investigate in more depth the interactions between marital status and NS-SEC in the determination of mortality rate risk.

Comparison with the estimates for men

Under both methods of classification, mortality rates for each NS-SEC class were statistically significantly lower than the corresponding rate for men.

The mortality rate ratio between least and most advantaged was 1.9 under the 'own' approach and 2.6 under the 'combined' approach, compared with a similar figure of 2.6 from the recent analysis of male mortality.[1] The overall gradients depend critically on the rates for those classified to routine occupations. If the condensed (three class) version of NS-SEC is used the gradients are based on larger units, and the measured inequality for women is less than that for men. The ratio of mortality rates between the 'Routine and manual' and the 'Managerial and professional' classes is 2.0 for men, and 1.8 for women under the 'combined' approach, and 1.4 under the 'own' approach. Thus it appears that women have a narrower socio-economic mortality gradient than men if 'own' classification is used, and a similar one if the 'combined' approach is used.

The dependence of mortality gradients on the classification system used implies that gender differences in the socio-economic mortality gradient are sensitive to the system of classification and measurement chosen. However, this is not the same as attributing the differences solely to artefact. It is possible that the results obtained using women's 'own' NS-SEC class reflect the impact of differences in their occupation-based status, whereas those obtained using the 'combined' rule reflect variations in access to a range of social and economic resources.

There are a number of potential explanations for generally lower observed mortality differences by occupation-based class for women than for men. One is that women are exposed to fewer occupational hazards than men in the same socio-economic class.[39] Another is that it might be the result of diseases responsible for a high proportion of premature deaths in women, such as breast cancer, having a small or inverse gradient.[11,27] Further analysis of female mortality by NS-SEC and major cause is planned for a future article in this series.

Reasons for socio-economic gradients in mortality

A number of factors have been used to explain gradients in mortality rates for both men and women in the literature. For example, Bartley[40] listed four main potential explanations, which are not necessarily mutually exclusive:

- material explanations suggest that individuals in disadvantaged classes are likely to have lower incomes and will tend to suffer poor health brought on, for example, by poor diet, poor quality housing, polluted environments and dangerous workplaces
- cultural-behavioural explanations suggest that individuals in less advantaged social groups are more likely to indulge in 'risky behaviours', for example, smoking, drinking, poor diet and lack of exercise
- psycho-social explanations suggest that individuals who are exposed to psychological stress at work brought on by, for example, lack of autonomy, poor reward structures and job strain, are more likely to experience poor health
- life-course explanations suggest that individuals exposed to risks earlier in life carry the risk with them through their lifetimes

The results presented here, using the 'own' classification approach, lend some support to psycho-social explanations, since NS-SEC itself is based conceptually on this theory, and has been shown to discriminate on the basis of a woman's 'own' classification. The 'combined' approach, which is the more effective discriminator of mortality, is more consistent with material and cultural-behavioural explanations, since the effects of income and status operate on the individual via the socio-economic position of the household rather than directly through the employment relations status of the individual. For example, there is evidence that women in the less advantaged classes are more likely to smoke, and this has been shown to be a major contributor to excess mortality.[41]

Limitations of the analysis

Owing to the very sparse recording of women's occupations at death after normal retirement age, it was necessary to restrict the analysis to women aged 25–59. Since only 8 per cent of adult women died age 59 or lower in the years 2001–03, this analysis is focused only on a minority of 'premature' deaths. This restriction had a more severe effect on the analysis than the analogous one for men.

The under-recording of occupations at death is a difficulty in any measurement of female mortality using an occupation-based classification.

The results are sensitive to the LS-based adjustment of the deaths not classified to an occupied NS-SEC class. This adjustment was, of necessity, based on a relatively small sample (only 158 in the case of the 'combined' approach). The resultant wider confidence intervals presented than those for men[1] reflect the size of the sample upon which this adjustment was based. (An illustration of the effect of adjustments can be found in Appendix Tables A5, A7 and Figures A1, A2, and are discussed above.)

The outcome measure used throughout this series of articles (age-standardised mortality ratios) was the most straightforward, but does not take account of the size of each class. This means that the comparison of the 'most advantaged' and 'least advantaged' class mortality rates had an arbitrary component dependent on the degree of subdivision of the class.

The range of inequalities presented here has not considered the rate for women who were 'unoccupied' according to their own classification. Given the known predictive power of unemployment in the analysis of premature mortality in men,[42] women who are not in the labour market potentially have a higher mortality risk than women assigned to routine occupations. Since these are excluded from the analysis when the 'own' classification is used, this may result in a reduction in the measured level of inequality.

The death registers during the period of this study did not recognise partnerships, and thus women in such partnerships have been treated as 'single'. The same definition was used to obtain the census populations, so the results presented above are internally consistent. However, there is an argument for treating women in partnerships in the same way as married women. The LS sample indicates that a maximum of 11 per cent of all women and 8 per cent of the women who died during the study period could change class under the broader definition of a family.

Conclusions

This analysis has estimated standardised mortality rates by NS-SEC for women aged 25–59 in the period 2001–03 using data from the 2001 Census and from death registrations. The results were refined using information from the ONS Longitudinal Study to adjust for known biases and for under-recording of occupational status. The age-standardised mortality rate for women classified to the routine occupations NS-SEC class in 2001–03 was 1.9 times that of those classified as higher managers and professionals when women's own occupation was used to assign them to an NS-SEC class. This ratio was 2.6 when a 'combined' measure was used for assignment, similar to the corresponding ratio for men.

A clear social gradient was evident under both methods of classification. The exception was women classified by their own occupation as small employers and own account workers (NS-SEC class 4), who had a mortality rate no higher than women classified as higher managerial and professional (NS-SEC class 1). Overall, the differences between the classes were not as well defined as those found in the analysis of male mortality.

The dependence of the results on the classification method illustrates the need to be clear on the conceptual basis underlying the two methods. Using a woman's NS-SEC based on her own occupation has a conceptual basis in employment relations, and is therefore more suitable for application in studies where the focus is on the role of occupational factors, or on comparisons with male mortality. Using the 'combined' measure best reflects access to social and economic resources, and may be more appropriate to other applications, such as the study of health inequalities among women.

Key findings

- The National Statistics Socio-economic Classification (NS-SEC), can be used effectively as a basis for the analysis of mortality in adult women
- In the period 2001–03, the age-standardised mortality rate of women aged 25–59 in routine occupations according to their own NS-SEC class was 220 per 100,000 population, 1.9 times the rate of 116 per 100,000 for women in higher managerial and professional occupations
- Using a combined classification incorporating information on husband's class, the age-standardised mortality rate of women aged 25–59 in the least advantaged class, was 302 per 100,000 population, 2.6 times the rate of 118 per 100,000 for women in the most advantaged class
- A clear social gradient is evident under both methods of classification. The exception was women classified by their own occupation as small employers and own account workers (NS-SEC class 4) who have a mortality rate no higher than women classified as higher managerial and professional (NS-SEC class 1)
- Using the combined classification, mortality rates increased with disadvantage for all classes. The increase was statistically significant between each of the following classes: higher managerial and professional, lower managerial and professional, small employers and own-account workers, semi-routine and routine occupations
- There were statistically significant differences in mortality rates between all classes using the three class condensed NS-SEC in a clear socio-economic gradient, when the combined classification was used
- The relative variation in mortality among women when classified to NS-SEC according to the combined classification was similar to that for men classified to NS-SEC by their occupation

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Box A1

National Statistics Socio-economic Classification – Operational categories and analytic classes

Operational categories	Eight class version	Five class version	Three class version
1 Employers in large establishments	1 Higher managerial and professional occupations	1 Managerial and professional occupations	1 Managerial and professional occupations
2 Higher managerial occupations			
3 Higher professional occupations			
4 Lower professional and higher technical occupations	2 Lower managerial and professional occupations		
5 Lower managerial occupations			
6 Higher supervisory occupations			
7 Intermediate occupations	3 Intermediate occupations	2 Intermediate occupations	2 Intermediate occupations
8 Employers in small organisations	4 Small employers and own account workers	3 Small employers and own account workers	
9 Own account workers			
10 Lower supervisory occupations	5 Lower supervisory and technical occupations	4 Lower supervisory and technical occupations	3 Routine and manual occupations
11 Lower technical occupations			
12 Semi-routine occupations	6 Semi-routine occupations	5 Semi-routine and routine occupations	
13 Routine occupations	7 Routine occupations		
14 Never worked and long-term unemployed	8 Never worked and long-term unemployed	Never worked and long-term unemployed	Never worked and long-term unemployed

Source: NS-SEC User Manual

Box A2

Details of the calculation of Filter X and Health Selection Adjustments

The denominators were subject to two adjustments. Firstly an adjustment was calculated to compensate for the Filter X rule.[1] This rule was applied at the 2001 Census, and as a consequence, all persons who had not worked since 1996 were allocated to the residual category 'not classifiable for other reasons'. When occupations are recorded on the death registers, no such time limit is applied: this difference in recording is likely to cause bias if not corrected.

The LS sample of 132,304 females covering the period from Census day 2001 to 31 December 2005 was used to produce a matrix of person-years by reduced NS-SEC and five-year age bands. The LS was fully coded at Census, that is, the Filter X rule was not applied. However, it is possible to simulate the effect on each individual record of the operation of the Filter X rule by changing the classification to 'Not Classified' if the year last worked was recorded on the LS as before 1996. Using this simulated variable, another matrix of person-years by reduced NS-SEC and five-year age bands was produced. Using the two matrices it was possible to identify the proportion of person-years in each age band assigned to 'Not Classified', that would have been in each NS-SEC class had the Filter X rule not been applied. These proportions were then applied to the census based mid-year 2001–03 population estimates of the 'Not Classified' person-years in each age band.

The second adjustment was to compensate for the potential effect of health selection bias.[23,24] The hypothesis is that health status influences social position, leading to a selection out of the labour market of those in ill-health which may have a disproportionate effect across NS-SEC class denominators. The LS, by linking data between censuses, makes it possible to obtain the previous occupation of a person who was in an unoccupied class in 2001 by reference to the 1991 Census.

A further matrix of person-years by five-year age band and NS-SEC can now be produced, with 1991 occupied classes, if available, substituted for unoccupied classes for relevant LS members. This was compared to the matrix of reduced NS-SEC produced without these corrections, but with the Filter X adjustments made. Using the two matrices it was possible to estimate the proportion in each age band of 'unoccupied' person years, that would have been in each NS-SEC class had the hypothesised 'health selection' not have occurred. The resultant reallocation proportions were than applied to the (Filter X adjusted) census based mid-year 2001–03 population estimates of the number of 'Not Classified' women in each age band.

Following correction for the Filter X bias, the remaining corrections for health selection were small.

Table A1 2001 Census populations by age and NS-SEC classification, women aged 25–59

England and Wales

Thousands

Age (years)	NS-SEC analytic class									
	1	2	3	4	5	6	7	FTS[1]	Other[2]	Total
'Own' classification										
25–29	167	486	319	44	87	258	128	71	190	1,750
30–34	184	521	352	84	97	320	154	42	277	2,031
35–39	164	505	337	108	96	358	162	32	312	2,074
40–44	123	449	292	105	90	333	152	22	277	1,841
45–49	98	418	264	100	82	297	140	12	252	1,663
50–54	84	408	290	116	87	333	163	6	324	1,810
55–59	50	267	215	94	65	266	142	3	394	1,495
Total	869	3,053	2,068	651	604	2,164	1,040	190	2,027	12,666
Percentage	*6.9*	*24.1*	*16.3*	*5.1*	*4.8*	*17.1*	*8.2*	*1.5*	*16.0*	*100.0*
'Combined' approach										
25–29	249	524	283	65	107	214	109	63	135	1,750
30–34	356	589	280	120	133	228	118	32	174	2,031
35–39	383	597	260	154	143	226	115	21	175	2,074
40–44	333	535	223	153	133	199	102	14	149	1,841
45–49	287	492	201	148	122	178	91	8	136	1,663
50–54	279	503	223	178	137	208	109	4	169	1,810
55–59	179	348	178	150	111	191	108	2	228	1,495
Total	2,067	3,587	1,648	967	887	1,445	753	145	1,166	12,666
Percentage	*16.3*	*28.3*	*13.0*	*7.6*	*7.0*	*11.4*	*5.9*	*1.1*	*9.2*	*100.0*

1 Full-time students.
2 Including never worked, long term unemployed, inadequately described, not classifiable for other reasons.
Source: Office for National Statistics, 2001 Census (custom tables provided by ONS Census Division)

Table A2 Population estimates for 2001–03 by age and NS-SEC classification, women aged 25–59

England and Wales

Thousands

Age (years)	NS-SEC analytic class									
	1	2	3	4	5	6	7	FTS[1]	Other[2]	Total
'Own' classification										
25–29	482	1,404	923	128	251	745	370	205	550	5,059
30–34	545	1,542	1,041	250	286	948	457	126	819	6,014
35–39	497	1,531	1,021	326	291	1,085	490	98	946	6,284
40–44	382	1,391	906	324	278	1,031	470	69	858	5,710
45–49	299	1,277	805	305	250	905	429	38	770	5,078
50–54	240	1,172	832	335	251	956	468	17	932	5,203
55–59	162	869	699	306	213	867	462	10	1,286	4,874
Total	2,607	9,187	6,227	1,974	1,820	6,539	3,144	563	6,161	38,221
Percentage	*6.8*	*24.0*	*16.3*	*5.2*	*4.8*	*17.1*	*8.2*	*1.5*	*16.1*	*100.0*
'Combined' approach										
25–29	721	1,515	819	187	310	620	315	182	391	5,059
30–34	1,055	1,745	828	355	394	676	351	95	515	6,014
35–39	1,162	1,809	787	466	433	686	349	64	529	6,284
40–44	1,031	1,657	693	473	413	617	317	44	463	5,710
45–49	877	1,501	615	450	372	543	279	25	414	5,078
50–54	801	1,445	642	512	394	599	313	11	486	5,203
55–59	583	1,136	579	489	361	623	353	8	742	4,874
Total	6,231	10,807	4,962	2,932	2,679	4,364	2,276	429	3,541	38,221
Percentage	*16.3*	*28.3*	*13.0*	*7.7*	*7.0*	*11.4*	*6.0*	*1.1*	*9.3*	*100.0*

1 Full-time students.
2 Including never worked, long term unemployed, inadequately described, not classifiable for other reasons.
Source: Office for National Statistics, 2001 Census (custom tables provided by ONS Census Division), mid-year population estimates for 2001, 2002 and 2003

Table A3

European standard population weights for age range 25–59 used in the calculation of age-standardised rates

Age (years)	European standard population weight
25–29	7,000
30–34	7,000
35–39	7,000
40–44	7,000
45–49	7,000
50–54	7,000
55–59	6,000

Table A4

Age specific mortality rates[1] and socio-economic gradients[2] by NS-SEC using 'own' classification, women aged 25–59, 2001–03

England and Wales — Rate per 100,000

Age (years)	NS-SEC using 'own' classification							Gradient
	1	2	3	4	5	6	7	
25–29	17	23	32	34	31	49	53	3.1
30–34	24	39	47	36	52	61	70	2.9
35–39	41	60	68	47	78	84	93	2.3
40–44	75	95	109	81	121	133	153	2.0
45–49	125	159	171	130	225	229	246	2.0
50–54	193	277	268	198	330	332	351	1.8
55–59	375	372	406	402	470	426	630	1.7

1 Numerators and denominators have been adjusted as described in article.
2 The ratio of mortality rates of NS-SEC class 7 to NS-SEC class 1.
Source: Office for National Statistics, death registrations 2001–03, optimised population estimates (see Table 1), ONS Longitudinal Study

Table A5

Age-standardised mortality rates[1] by NS-SEC using 'own' classification before adjusting for under-recording of occupation at death, women aged 25–59, 2001–03

England and Wales — Rate per 100,000

	Mortality rate	Lower 95 per cent confidence interval	Upper 95 per cent confidence interval
1 Higher managerial and professional	90	85	94
2 Lower managerial and professional	118	116	120
3 Intermediate	100	97	102
4 Small employers and own account workers	84	80	88
5 Lower supervisory and technical	96	92	100
6 Semi-routine	105	103	107
7 Routine	106	103	109

1 Rates are directly standardised using the European standard population. Numerators and denominators have been adjusted as described in article except the adjustments for under-recording of occupation at death (see Methods).
Source: Office for National Statistics, death registrations 2001–03, optimised population estimates (see Table 1)

Table A6

Age-specific mortality rates[1] and socio-economic gradients[2] by NS-SEC using 'combined' classification, women aged 25–59, 2001–03

England and Wales — Rate per 100,000

Age (years)	NS–SEC using the 'combined' approach							Gradient
	1	2	3	4	5	6	7	
25–29	20	21	31	43	33	51	60	3.0
30–34	27	35	49	50	54	71	84	3.1
35–39	43	56	71	67	87	99	126	2.9
40–44	74	88	114	112	130	165	226	3.1
45–49	127	147	175	185	243	283	379	3.0
50–54	205	258	266	282	376	393	549	2.7
55–59	363	392	371	462	606	526	757	2.1

1 Numerators and denominators have been adjusted as described in article.
2 The ratio of mortality rates of NS-SEC class 7 to NS-SEC class 1.
Source: Office for National Statistics, death registrations 2001–03, optimised population estimates (see Table 1), ONS Longitudinal Study

Table A7

Age-standardised mortality rates[1] by NS-SEC using 'combined' approach before adjusting for under-recording of occupation at death, women 25–59, 2001–03

England and Wales — Rate per 100,000

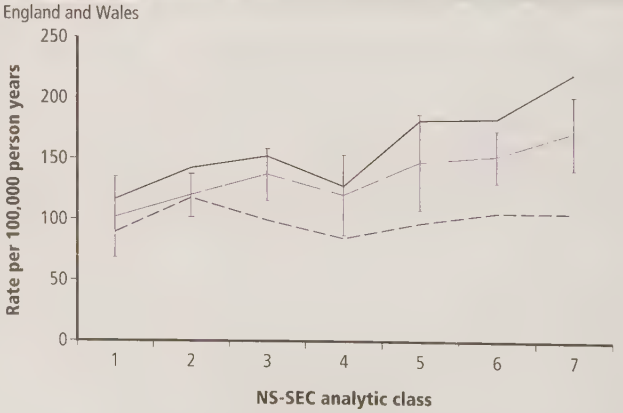
	Mortality rate	Lower 95 per cent confidence interval	Upper 95 per cent confidence interval
1 Higher managerial and professional	110	107	113
2 Lower managerial and professional	128	126	130
3 Intermediate	124	121	127
4 Small employers and own account workers	148	144	152
5 Lower supervisory and technical	175	170	179
6 Semi-routine	172	168	176
7 Routine	239	233	245

1 Rates are directly standardised using the European standard population. Numerators and denominators have been adjusted as described in article except the adjustments for under-recording of occupation at death (see Methods).
Source: Office for National Statistics, death registrations 2001–03, optimised population estimates (see Table 1)

Figure A1

Age-standardised mortality rates by NS-SEC using 'own' classification, a comparison of adjusted and unadjusted results and those based on the LS, women aged 25–59, 2001–03

England and Wales

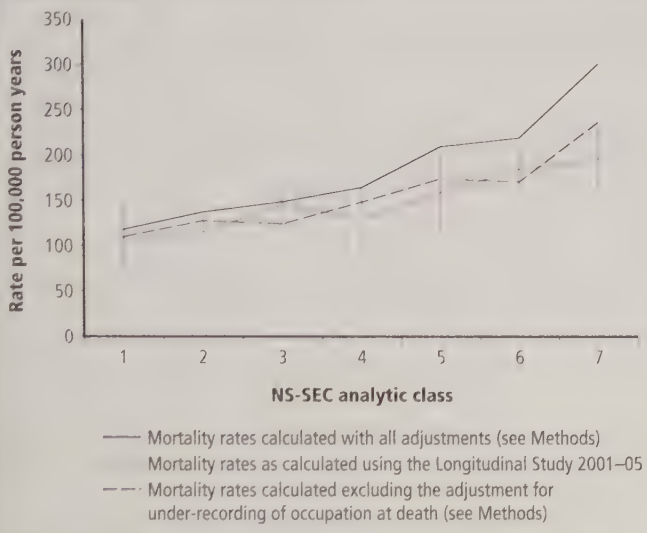


Mortality rates calculated with all adjustments (see Methods)
Mortality rates as calculated using the Longitudinal Study 2001–05
Mortality rates calculated excluding the adjustment for under-recording of occupation at death (see Methods)

Source: Office for National Statistics, death registrations 2001–03, optimised population estimates (see Table 1), ONS Longitudinal Study

Figure A2 Age-standardised mortality rates by NS-SEC using the 'combined' approach, a comparison of adjusted and unadjusted results and those based on the LS, women aged 25–59, 2001–03

England and Wales

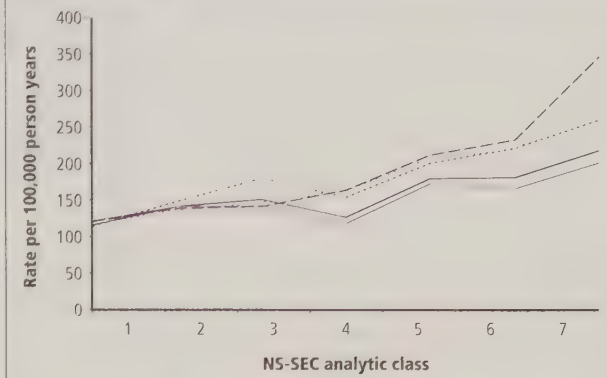


Mortality rates calculated with all adjustments (see Methods)
Mortality rates as calculated using the Longitudinal Study 2001–05
Mortality rates calculated excluding the adjustment for under-recording of occupation at death (see Methods)

Source: Office for National Statistics, death registrations 2001–03, optimised population estimates (see Table 1), ONS Longitudinal Study

Figure A3 Age-standardised mortality rates by NS-SEC: comparison of mortality rates for all women, married women and non-married women by 'own' and 'combined' approaches to NS-SEC classification, women aged 25–59, 2001–03

England and Wales



All women using 'own' NS-SEC classification
Married women using 'own' NS-SEC classification, adjustments (see Methods) as for 'own' classification
Non-married women using 'own' NS-SEC classification, adjustments (see Methods) as for 'own' classification
All women using 'combined' NS-SEC classification
Married women using 'combined' NS-SEC classification, adjustments (see Methods) as for 'combined' classification

Source: Office for National Statistics, death registrations 2001–03, optimised population estimates (see Table 1), ONS Longitudinal Study

Multivariate analysis of infant death in England and Wales in 2005–06, with focus on socio-economic status and deprivation

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Current health inequality targets include the goal of reducing the differential in infant mortality between social groups. This article reports on a multivariate analysis of risk factors for infant mortality, with specific focus on deprivation and socio-economic status. Data on all singleton live births in England and Wales in 2005–06 were used and deprivation quintile (Carstairs index) was assigned to each birth using postcode at birth registration. Deprivation had a strong independent effect on infant mortality, risk of death tending to increase with increasing levels of deprivation. The strength of this relationship depended, however, on whether the babies were low birthweight, preterm or small-for-gestational-age. Trends of increasing mortality risk with increasing deprivation were strongest in the postneonatal period. Uniquely, this article reports the number and proportion of all infant deaths which would potentially be avoided if all levels of deprivation were reduced to that of the least deprived group. It estimates that one quarter of all infant deaths would potentially be avoided if deprivation levels were reduced in this way.

Introduction

There are many established risk factors for infant mortality; prematurity,[1] low birthweight[2] and multiplicity[3] being the most significant in terms of strength of association and consistency. Risk factors are known to vary according to age at death. For example, the effect of low birthweight and prematurity is stronger in the neonatal period than the postneonatal period.[4]

Socio-economic status is strongly associated with deaths under one year, with a clear trend observed for increased mortality among births occurring to more socially disadvantaged mothers. In 2007, infants of fathers in the routine occupations class had an infant mortality rate of 5.8 per 1,000 live births compared with a rate of 2.8 per 1,000 live births among infants born to fathers in the large employers and higher managerial occupations class.[5] Social inequalities in health are a key public health focus. Public Service Agreement (PSA) targets set in 2001 and updated in 2004, to be achieved by 2010, include the goal of reducing the gap between the infant mortality rate for the routine and manual class and the rate for the population as a whole by at least 10 per cent.[6]

Social class derived from father's occupation is a frequently used indicator of socio-economic status and the indicator used in the setting of the PSA target. However, it is not the only indicator of socio-economic status available. Deprivation indices, such as Carstairs scores are area-based measures of economic and social deprivation and have been used as another indicator of socio-economic status. Deprivation indices are subject to the usual limitations of ecological summary measures, but may provide a measure of socio-economic status where other indicators are unreliable or unavailable. An advantage of area-based measures is that they are not reliant on the

availability of individual data. This is a particular issue with the National Statistics Socio-economic Classification (NS-SEC), as sole registered births (births occurring outside marriage, registered by the mother alone) are not coded to NS-SEC because father's occupation is not available. In addition, only a 10 per cent sample of live birth records (which have occurred inside marriage or jointly registered by both parents) are coded to NS-SEC.

Previous studies have used deprivation indices to investigate the role of deprivation in infant mortality, observing similar trends to occupational social class.[7,8,9] The literature on the relationship between social class and deprivation indices is mixed, with some authors suggesting that deprivation indices can be used as a proxy for social class, and other authors expressing caution and suggesting that area-based deprivation has an independent effect on mortality.

National infant mortality rates have previously been investigated with respect to important risk factors such as multiplicity, sex, mother's age, marital status/type of registration and parity inside marriage and the results presented separately for each risk factor in turn,[10] but little work has been conducted using multivariate analysis. The recent exception to this was an analysis of risk factors for neonatal mortality among singleton infants weighing 2,500–5,499 grams.[11] This analysis found that even after excluding low birthweight babies, birthweight was still the strongest risk factor for neonatal mortality. Sex and older maternal age both remained independently associated with neonatal mortality in this sample after adjustment for other factors.

Recent methodological improvements have provided useful opportunities for the investigation of infant mortality in England and Wales. The introduction of the NHS Numbers for Babies (NN4B) programme in 2005 (when NHS numbers began to be allocated at birth) has enabled the linkage of key variables (such as gestation and ethnicity of the infant) to birth registration records. Information on these variables is not collected at live birth registration, and so previously these data have been unavailable for analysis (and were not included in the multivariate analysis quoted earlier[11]).

In this article we report our investigation into risk factors for infant mortality in England and Wales in 2005–06, focusing on the contribution of socio-economic status and deprivation.

Methods

Source data

Data on all live births that occurred in England and Wales in 2005 and 2006 were extracted from birth registration records linked to the corresponding NN4B record. A detailed description of this linkage process as applied to births occurring in the first quarter of 2005 is reported in an earlier *Health Statistics Quarterly* article.[12]

For births which had resulted in infant death, further details of timing and cause of death were obtained by linkage to death registration records. Details on this linkage have been published previously.[13] The data extract was taken in mid-2008 to ensure the inclusion of all late birth and death registrations. Multiple births were excluded from the data extract prior to the main analysis, since risk factors for mortality are likely to differ substantially for these births.

Variables available for analysis

Socio-economic status: NS-SEC and deprivation index

The role of social inequalities in infant mortality was a key focus of this investigation. NS-SEC replaced previously-used classifications of Social Class and Socio-economic Groups in 2001, and represents the current system of allocating socio-economic status to reported occupational position. A detailed description of NS-SEC is published on the Office for National Statistics (ONS) website.[14] The principal version of NS-SEC is an eight or nine group analytic version, collapsible to five or three group versions (Box One). The analysis reported here uses the three class version of NS-SEC, as this includes the routine and manual group which was used in the setting of the PSA target on infant mortality. Parental occupation is recorded at birth and death registration, but only NS-SEC status coded at birth registration was used for this analysis. However, since NS-SEC status was missing for over 90 per cent of the data (being only available for a 10 per cent sample of married/jointly registered births and not present at all for sole registrations) most analyses in this paper did not concentrate on this measure of socio-economic status.

Box one

National Statistics Socio-economic Classification

Principal version	5 group version	3 group version
1.1 Large employers and higher managerial occupations	1 Managerial and professional occupations	1 Managerial and professional occupations
1.2 Higher professional occupations		
2 Lower managerial and professional occupations		
3 Intermediate occupations	2 Intermediate occupations	2 Intermediate occupations
4 Small employers and own account workers	3 Small employers and own account workers	
5 Lower supervisory and technical occupations	4 Lower supervisory and technical occupations	3 Routine and manual occupations
6 Semi-routine occupations	5 Semi-routine and routine occupations	
7 Routine occupations		
8 Never worked and long-term unemployed	Never worked and long-term unemployed	Never worked and long-term unemployed

The Carstairs deprivation index was used to assign a deprivation score to all births, according to the postcode given at birth registration. This deprivation index was chosen as it is frequently used for other ONS health-related analyses and correlates well with other deprivation indices. A full description of how Carstairs scores are calculated is in an earlier article.[15] Briefly, Carstairs scores are based on the un-weighted combination of four variables from the 2001 Census (unemployment, overcrowding, car ownership and low social class) (Box Two), and are assigned to the postcode. The Carstairs index is thus an ecological (rather than individual) based measure, since postcodes only identify the address to within an average of 15 properties per postcode (and can be up to 100 properties). The Carstairs scores for the total (all ages) population can be used to rank electoral wards from the least to the most deprived and divided into percentile groups. For this analysis electoral wards were divided into quintiles (equal fifths) of deprivation using 2001 experimental ward total population estimates. Since these quintiles are based on the total (all age) population, numbers of live births within each Carstairs deprivation group in this analysis will not be equal.

Box two

2001 Census variables used in the calculation of the Carstairs deprivation index

Unemployment: unemployed males 16 and over as a proportion of all economically active males aged 16 and over

Overcrowding: persons in households with one or more persons per room as a proportion of all residents in households

Car ownership: residents in households with no car as a proportion of all residents in households

Low Social Class: residents in households with an economically active head of household in Social Class IV or V approximated from NS-SEC as a proportion

Other social and biological risk factors

The following information was taken from birth registration records: maternal age at birth, maternal country of birth, birthweight of infant, year of birth of infant and sex of infant. Parity of the mother was available from birth registration records but was excluded as it only refers to parity within marriage and is therefore not a reliable indicator of 'true' parity. The ethnicity of the infant (as defined by the mother using pre-specified categories) was taken from NN4B data, along with gestational age at birth. A composite variable incorporating maternal country of birth (UK versus non-UK) and infant's ethnicity (collapsed into four categories: Asian, Black, White, Other) was also created. Sex-standardised birthweight for gestational age was calculated using within-cohort gestation- and sex-specific centiles. Infants with birthweights below the 5th centile were classified as 'small-for-gestational-age'.

Classification of infant deaths

Timing of death was classified as early neonatal, late neonatal, or postneonatal, according to established definitions (Box Three). Causes of death were grouped using ONS cause groups,[16] based on the established Wigglesworth classification system. Deaths were classified according to causes occurring before the onset of labour (congenital anomalies, antepartum infections, or immaturity related conditions), in or shortly after labour (asphyxia, anoxia or intrapartum trauma), postnatally (other specific conditions, sudden infant deaths), and other (other conditions not mentioned above).

Box three

Definitions used in this paper

Early neonatal deaths: deaths at ages under 7 days

Late neonatal deaths: deaths at ages 7 days and over but under 28 days

Neonatal deaths: deaths at ages under 28 days

Postneonatal deaths: deaths at ages 28 days and over but under one year

Infant deaths: deaths under one year

Early neonatal mortality rate: early neonatal deaths per 1,000 live births

Late neonatal mortality rate: late neonatal deaths per 1,000 live births surviving the early neonatal period

Neonatal mortality rate: neonatal deaths per 1,000 live births

Postneonatal mortality rate: postneonatal deaths per 1,000 live births surviving the neonatal period

Infant mortality rate: infant deaths per 1,000 live births

Statistical analysis

All analyses in this paper were performed using Stata statistical software (version 10, Stata Corp, College Station, TX, USA). All P-values quoted are two-sided and values less than 0.05 have been taken to indicate statistical significance.

Mortality rates were calculated using the number of infants still alive and at risk at the beginning of each time period (Box Three).

The multivariate analysis followed a strategy which included consideration of both plausible confounding (Box Four) and potential causal pathways. Carstairs deprivation indices and (among the 10 per cent sample where this was coded) NS-SEC were considered to be the main factors of interest in this analysis, with maternal age, marital/registration status, maternal country of birth, and sex and ethnicity of the baby being considered as potential confounding variables.

Box four

Confounding and Interaction

Confounding is the situation where an association between an exposure and an outcome is entirely or partially due to another exposure (called the confounder). A variable will only confound an association if it satisfies three conditions:

- It must be associated with the exposure of interest
- It must be a risk factor for the outcome of interest
- It must not be on the causal pathway (be an intervening or mediating variable) between the exposure of interest and the outcome of interest

An example is the finding that coffee drinking is associated with risk of coronary heart disease (CHD). In fact coffee drinking is not a risk factor for CHD, but the observation is driven by the fact that people who drink coffee are more likely to smoke than people who do not drink coffee. When the data are analysed separately for smokers and non-smokers (stratified by smoking status) we find that coffee drinking is not, in itself, a risk factor. This is an example of complete confounding, but most examples are of partial confounding.

There are several ways of making adjustments for confounding effects, and all involve the stratification of data according to different levels of the potential confounding factor. It is important to note that in confounding, the two factors (the exposure of interest and the potential confounder) are associated with each other (for example, coffee drinkers are more likely to smoke than non-coffee drinkers) but do not act together –or rely on each other – to produce an effect. They act independently.

Interaction (or effect modification) is an effect of two exposures (or risk factors) on an outcome, where the effects are not independent. They act together to produce an effect on the outcome which is different than the effect of each factor separately. In this situation it is not possible to 'adjust' for one of the factors, and the results must be presented separately for different levels of the effect modifier.

Analyses were conducted separately for neonatal, postneonatal and total infant mortality. The association between mortality and deprivation, controlling for confounding, was explored using logistic regression analysis, effects on risk being estimated by odds ratios (OR) with 95 per cent confidence intervals (CI), and statistical significance being tested using likelihood ratio tests.[17] The odds ratios are sometimes referred to as generic 'relative risks' in the text.

The association between deprivation and socio-economic status and infant mortality in relation to the more 'proximal' factors (along the causal pathway) of gestation and birthweight (and sex-standardised weight for gestation) was explored further by examining interaction terms in the models (Box Four). To maximise statistical power, interaction terms with Carstairs index or NS-SEC were calculated using a dichotomised version of the potential modifying variable (for example, interaction of deprivation with birthweight: 10 categories, 5 deprivation quintiles, and two birthweight categories (<2,500 grams, 2,500 grams and over). Since there is substantial overlap between preterm delivery, low birthweight and small-for-gestational-age, these three factors could only be considered in separate analyses. Stratified measures of effect were reported when statistically significant interactions were found.

Although NS-SEC is the variable most relevant to the PSA target, the small proportion of births coded to NS-SEC, together with the exclusion of sole registrations from the coding led to conducting the majority of the analyses using deprivation as the main factor of interest. An analysis of the interrelationship between NS-SEC and Carstairs deprivation among the 10 per cent sample of births where the parents were married or jointly registered the birth was included in order to test the validity of this decision.

Population excess (or attributable) deaths and population excess (or attributable) deaths per cent were calculated using adjusted odds ratios (Box Five). These measure the number and proportion of deaths in the population that would potentially be avoided if the risk in the 'exposed' group was the same as that in the baseline or 'unexposed' group. It should be emphasised that this is a theoretical construct and is used in this work for illustrative purposes only.

Box five

Calculation of Population Excess Deaths (Population Attributable Risk) and Population Excess Deaths per cent (Population Attributable Risk Fraction)

Population excess per cent, also called the population attributable risk fraction, refers to the proportion of deaths in a population that can be attributed to an exposure, and is the proportion of deaths that could theoretically be saved or avoided in the population if the exposure was removed. There are several ways of calculating this, but in this paper the following were used:

(i) Where there are two strata only (exposed and unexposed):

$$p\,(RR-1)/(RR-1)+1$$

where p=proportion of population exposed, and RR is the adjusted relative risk between exposure and outcome. Odds Ratios are used to estimate the relative risk

(ii) Where there were more than two strata:

$$p_i\,(RR_i-1)/RR_i$$

where i refers to each stratum, and p_i = proportion of 'exposed' (in groups above the baseline category) deaths in stratum i

Population excess deaths refer to the number of deaths that can be attributed to a factor, and that theoretically could be 'saved' or 'avoided' if the factor was removed from the population. In this paper these were calculated as the total number of deaths within the population (or stratum) multiplied by the population (or stratum) excess per cent.

Results

Overall there were 1,315,352 live births that occurred in 2005 and 2006 and were registered in England and Wales, 3 per cent (39,154) of which were multiple births. All but 1,387 of these births (0.1 per cent) were successfully linked to the corresponding NN4B birth record. Among these births, 6,491 were registered as infant deaths (3,444 early neonatal, 1,099 late neonatal and 1,948 postneonatal deaths). Mortality rates were higher among multiple births, with an infant mortality rate of 23.5 per 1,000 live births compared with 4.4 per 1,000 live births for singleton births. Early neonatal mortality was particularly high among multiple births compared to singletons (14.4 compared with 2.3 per 1,000 live births). Multiple births were excluded from all further analyses, as their risk profile is likely to differ substantially from that of singleton babies.

Descriptive analyses

A description of infant mortality rates by year of death and the available social and biological risk factors is presented in Table 1. Among 1,276,198 singleton live births registered in 2005–06 there were a total of 5,571 infant deaths, giving an overall infant mortality rate of 4.4 per 1,000 live births. There was no difference in infant mortality between 2005 and 2006.

Death rates were more than twice as high in the first 28 days of life as in the subsequent 11 months. There were marked trends of increasing mortality with increasing deprivation (all babies) and increasing mortality with declining social class as measured by NS-SEC (among the subset for which this was coded).

Babies born to married parents had the lowest infant mortality, with the highest risks observed among babies registered by parents living at different addresses and those where the birth was registered by the mother alone (sole registrations).

Infants born to mothers who were born outside the UK had higher risks than those born to UK-born mothers. Non-White babies had higher mortality rates than White babies, particularly those classified as Asian or Black. Interestingly, within each ethnic group mortality was lower among those born to non-UK-born mothers, the only exception being White babies in the neonatal period, where the rates were the same.

There was a u-shaped relationship between mortality and maternal age, more marked in the neonatal period, with the lowest risk among babies whose mothers were aged 30–34 at birth.

With regard to the characteristics of the babies themselves, males had around 20 per cent higher mortality than females. Highest mortality rates were observed among preterm infants with rates declining dramatically with increasing gestational age: among preterm infants the rates ranged from 372.9 to 6.5 deaths per 1,000 in the neonatal period, and from 81.1 to 4.4 deaths per 1,000 in the postneonatal period, the rates then reducing to under 1 per 1,000 in both periods for babies born at 37 weeks and over.

A similar pattern was observed for low birthweight babies compared with those weighing 2,500 grams or more, the rates reducing from 170.6 and 7.6 per 1,000 live births (neonatal period) and 38.9 and 5.3 per 1,000 (postneonatal period) among extremely and very low birthweight babies respectively, to under 1 per 1,000 in both periods for babies weighing 2,500 grams or more.

Similarly, babies whose weight was below the 5 per cent centile of sex-specific weight-for-gestation had infant mortality rates that were almost 3.5 times those of babies at or above the 5th centile. The neonatal mortality rate for small-for-gestational-age babies was 3.2 times, and the postneonatal mortality rate 4 times, that for non-small-for-gestational-age babies.

Table 1 Singleton neonatal, postneonatal and infant deaths (numbers and rates) by social and biological risk factors, 2005–06

England and Wales

		Numbers				Rates		
		Live births	Deaths					
			Neonatal	Postneonatal	Infant	Neonatal[1]	Postneonatal[2]	Infant[1]
Total		1,276,198	3,797	1,774	5,571	3.0	1.4	4.4
Year	2005	626,917	1,875	867	2,742	3.0	1.4	4.4
	2006	649,281	1,922	907	2,829	3.0	1.4	4.4
Carstairs deprivation index	1 (least deprived)	199,540	399	176	575	2.0	0.9	2.9
	2	213,613	488	222	710	2.3	1.0	3.3
	3	239,341	619	279	898	2.6	1.2	3.8
	4	276,132	891	416	1,307	3.2	1.5	4.7
	5 (most deprived)	347,182	1,387	676	2,063	4.0	2.0	5.9
	Missing	390	13	5	18	33.3	13.3	46.2
NS-SEC	Higher and professional	44,651	100	33	133	2.2	0.7	3.0
	Intermediate	23,103	54	30	84	2.3	1.3	3.6
	Routine and manual	44,136	152	56	208	3.4	1.3	4.7
	Other (unemployed/students/ns)	7,234	35	14	49	4.8	1.9	6.8
	Missing	1,157,074	3,456	1,641	5,097	3.0	1.4	4.4
Registration type/Marital status	Married	722,871	1,895	840	2,735	2.6	1.2	3.8
	Sole registration[3]	88,242	309	243	552	3.5	2.8	6.3
	Joint registration/same address[4]	351,429	1,147	461	1,608	3.3	1.3	4.6
	Joint registration/different address[4]	113,656	446	230	676	3.9	2.0	5.9
Maternal age (years)	<20	89,108	353	200	553	4.0	2.3	6.2
	20–24	245,328	795	469	1,264	3.2	1.9	5.2
	25–29	328,102	1,014	411	1,425	3.1	1.3	4.3
	30–34	364,249	914	374	1,288	2.5	1.0	3.5
	35–39	205,633	559	263	822	2.7	1.3	4.0
	40 and over	43,777	162	57	219	3.7	1.3	5.0
Maternal country of birth	UK	1,002,722	2,827	1,368	4,195	2.8	1.4	4.2
	non-UK	273,439	969	406	1,375	3.5	1.5	5.0
Sex of baby	Male	653,362	2,127	1,002	3,129	3.3	1.5	4.8
	Female	622,836	1,670	772	2,442	2.7	1.2	3.9
Ethnicity of baby	White	889,241	2,265	1,125	3,390	2.5	1.3	3.8
	Asian	96,908	433	228	661	4.5	2.4	6.8
	Black	53,999	273	98	371	5.1	1.8	6.9
	Other	102,133	348	160	508	3.4	1.6	5.0
	Missing	133,917	478	326	804	3.6	2.4	6.0
Baby's ethnicity and maternal country of birth	White, UK born	812,702	2,072	1,056	3,128	2.5	1.3	3.8
	White, non-UK born	76,517	193	69	262	2.5	0.9	3.4
	Asian, UK born	32,203	161	84	245	5.0	2.6	7.6
	Asian, non-UK born	64,700	272	144	416	4.2	2.2	6.4
	Black, UK born	11,992	67	26	93	5.6	2.2	7.8
	Black, non-UK born	42,004	206	72	278	4.9	1.7	6.6
	Other, UK born	42,093	165	74	239	3.9	1.8	5.7
	Other, non-UK born	60,037	182	86	268	3.0	1.4	4.5
	Missing (not stated/not linked)	133,950	479	163	642	3.6	1.2	4.8
Gestation (weeks)	21–27	4,934	1,840	251	2,091	372.9	81.1	423.8
	28–31	8,866	335	132	467	37.8	15.5	52.7
	32–36	64,330	418	280	698	6.5	4.4	10.9
	37–41	1,131,844	1,027	1,045	2,072	0.9	0.9	1.8
	42 and over	56,260	52	46	98	0.9	0.8	1.7
	Missing	9,964	125	20	145	12.5	2.0	14.6
Birthweight (grams)	<1,500	12,132	2,070	391	2,461	170.6	38.9	202.9
	1,500–2,499	65,050	497	341	838	7.6	5.3	12.9
	2,500–4,499	1,169,415	1,034	1,017	2,051	0.9	0.9	1.8
	4,500 and over	21,709	19	10	29	0.9	0.5	1.3
	Missing	7,892	177	15	192	22.4	1.9	24.3
Small for gestational age	SGA (<5%)	62,136	478	295	773	7.7	4.8	12.4
	Not SGA (≥5%)	1,203,756	2,860	1,459	4,316	2.4	1.2	3.6
	Missing	10,306	462	20	482	44.8	2.0	46.8

1 Neonatal and infant mortality rates are given per 1,000 live births.
2 Postneonatal mortality rates are given per 1,000 live births surviving the neonatal period.
3 Birth takes place outside marriage, only mother registers the birth.
4 Birth takes place outside marriage, both mother and father register the birth.

Mortality rates appeared high among those with missing information on gestation and birthweight. The reason for this is not known, but one possible explanation may be due to prioritising emergency/intensive care of high risk babies over recording data, particularly on the NN4B.

Cause of death

Immaturity-related conditions and congenital anomalies (42 per cent and 30 per cent of all infant deaths respectively) caused the largest numbers and rates of infant death (Table 2). In the neonatal period immaturity-related death predominated at 1.6 per 1,000 live births, with congenital anomalies accounting for a further 0.8 per 1,000 live births; these two causes accounted for 80 per cent of all neonatal deaths. In the postneonatal period congenital anomalies were the most common cause of death, 0.5 per 1,000 (36 per cent of all postneonatal death). Three other causes – immaturity, sudden infant death and other conditions – accounted for a further 41 per cent of deaths, each with a rate 0.2 per 1,000 (Table 2).

Table 2 **Singleton neonatal, postneonatal and infant deaths by cause of death and deprivation quintile, 2005–06**

England and Wales

Cause group	Numbers of Deaths			Rates		
	Neonatal	Postneonatal	Infant	Neonatal[1]	Postneonatal[2]	Infant[1]
Congenital anomalies	1,008	646	1,654	0.8	0.5	1.3
Antepartum infections	121	19	140	0.1	—	0.1
Immaturity related conditions	2,045	267	2,312	1.6	0.2	1.8
Asphyxia, anoxia or trauma (intrapartum)	369	11	380	0.3	—	0.3
External conditions	18	88	106	—	0.1	0.1
Infections	55	170	225	—	0.1	0.2
Other specific conditions	21	39	60	—	—	—
Sudden infant deaths	49	252	301	—	0.2	0.2
Other conditions	111	282	393	0.1	0.2	0.3

1 Neonatal and infant mortality rates are given per 1,000 live births.
2 Postneonatal mortality rates are given per 1,000 live births surviving the neonatal period.

Mortality from immaturity related conditions increased with increasing deprivation in both neonatal and postneonatal death periods, though this was more marked in the neonatal period (Figure 1). Conversely, trends for deaths from causes related to congenital anomalies were less marked with increasing deprivation in the neonatal period, but stronger in the postneonatal period. Death from antepartum infection and other conditions also showed strong trends with increasing deprivation in the neonatal period, but there were no other consistent trends in the first 28 days of life. In the postneonatal period mortality from sudden infant death increased markedly with increasing levels of deprivation, as did deaths from external factors, infections, and other causes.

National Statistics Socio-economic Classification and Carstairs deprivation index

Infant mortality rates by Carstairs classification and NS-SEC are presented in Table 3 for the 10 per cent sample of live births leading to infant deaths where NS-SEC was coded.

Overall, the mortality rates for NS-SEC and Carstairs deprivation index mapped well to each other (Table 3). The limitations of the ecological nature of the Carstairs measure are demonstrated in the body of the table, where it can be seen that within each (individually-coded) NS-SEC grouping there were births coded to all five deprivation categories, even in the highest (managerial and professional) group. The one exception to this was among babies of fathers who were unemployed or students (or no stated occupation), where there were no deaths and only 297 live births in the least deprived Carstairs category.

Multivariate analysis

Association between deprivation and co-variates (potential confounding variables and more proximal risk factors for infant mortality)

Maternal age, marital status/registration type, maternal country of birth and baby's ethnicity were all strongly related to Carstairs deprivation index (all P<0.001). As levels of deprivation increased, mothers tended to be younger, less likely to be married or living with the father, and more likely to be non-UK-born. Babies who were Asian, Black or of other non-White ethnicity tended to have higher levels of deprivation.

Figure 1 **Cause of death rates by deprivation quintile for all deaths where a cause of death was available, for neonatal and postneonatal deaths, 2005–06**

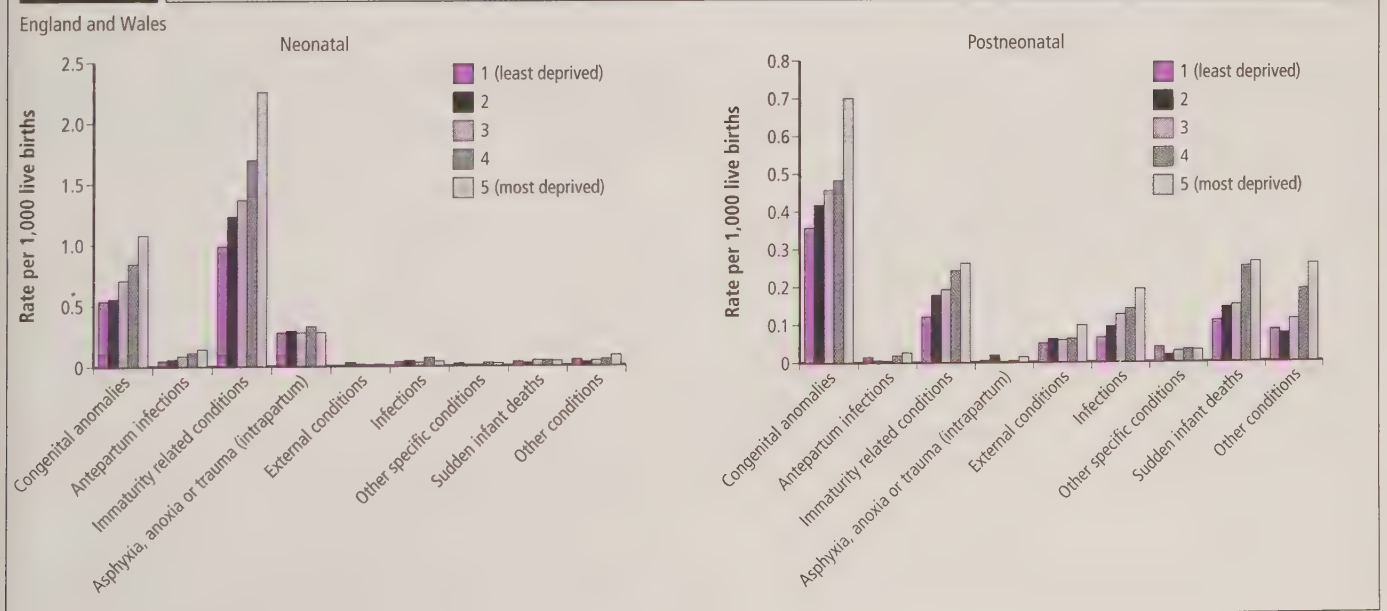


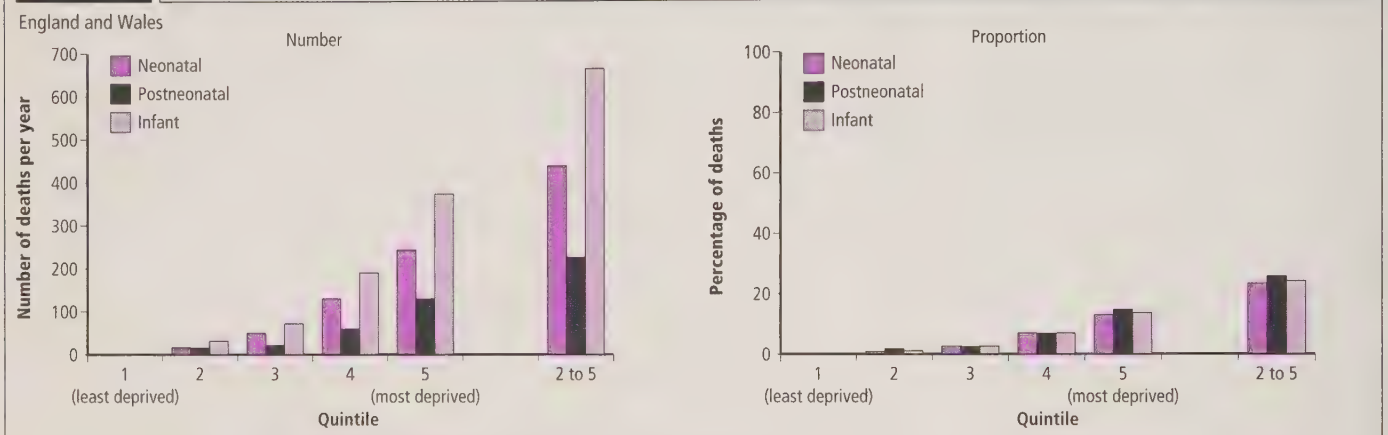
Table 3 Neonatal, postneonatal and infant deaths rates by Carstairs quintile and NS-SEC, 2005–06

England and Wales

Carstairs quintiles	NS-SEC												All		
	Managerial and professional			Intermediate			Routine and manual			Other					
	Neonatal[1]	Post-neonatal[2]	Infant[1]	Neonatal[1]	Post-neonatal[2]	Infant[1]	Neonatal[1]	Post-neonatal[2]	Infant[1]	Neonatal[1]	Post-neonatal[2]	Infant[1]	Neonatal[1]	Post-neonatal[2]	Infant[1]
1 (least deprived)	1.6	0.6	2.2	1.8	0.8	2.5	2.0	1.3	3.3	–	–	–	1.7	0.8	2.4
2	2.0	0.1	2.1	1.8	0.4	2.2	2.7	1.7	4.3	6.0	4.0	10.0	2.2	0.7	3.0
3	2.4	0.9	3.3	2.2	1.1	3.3	2.8	1.5	4.2	4.8	2.4	7.3	2.6	1.2	3.8
4	2.3	1.0	3.4	2.6	1.9	4.5	3.8	1.1	4.9	3.5	2.9	6.4	3.1	1.4	4.5
5 (most deprived)	3.3	1.3	4.6	3.2	2.0	5.2	4.3	1.1	5.4	5.7	1.3	6.9	4.0	1.3	5.4
All	2.2	0.7	3.0	2.3	1.3	3.6	3.4	1.3	4.7	4.8	1.9	6.8	2.9	1.1	4.0

1 Neonatal and infant mortality rates are given per 1,000 live births.
2 Postneonatal mortality rates are given per 1,000 live births surviving the neonatal period.

Figure 2 Estimated number and proportion of deaths that would potentially be avoided per year in different deprivation groups if their deprivation level was reduced to the lowest deprivation level (quintile 1)



Note: 2005 and 2006 data are adjusted for maternal age, registration status, sex and ethnicity of child.

As might be expected, there was no association between sex of the baby and deprivation level (P>0.05). Preterm delivery, low birthweight and small-for-gestational-age (<5th centile, adjusted for gender) all showed marked increasing trends in prevalence with increasing levels of deprivation (Appendix Table A1).

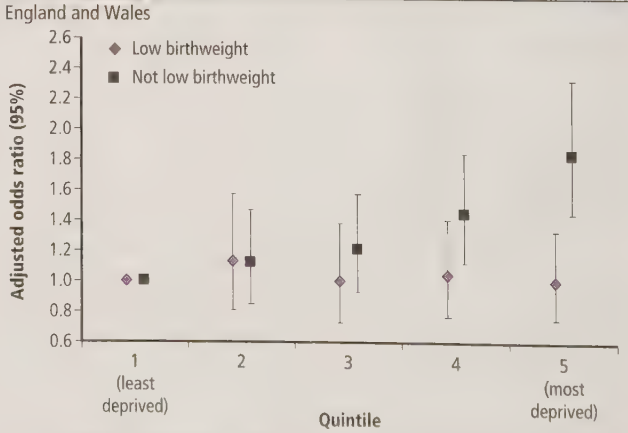
Association between deprivation/socio-economic status and infant mortality

Carstairs deprivation index

There was a highly statistically significant independent association between deprivation and risk of infant mortality, similar in both neonatal and postneonatal periods, with a marked trend of increasing risk of infant mortality with increasing levels of deprivation (Tables 4 to 6). There was evidence of some confounding of this relationship by maternal age, registration status and sex and ethnicity of the baby, though the association remained after adjustment for these factors. For example, after adjustment, risk of overall infant mortality in the most deprived group was estimated to be around 1.6 times that in the least deprived group (OR (95 per cent CI): 1.57 (1.41, 1.75)), having reduced from a crude OR of around two (Table 6). The number and proportion of excess deaths, which potentially would be avoided if deprivation levels reduced to the lowest level, rose with increasing levels of deprivation. Twenty-four per cent of all infant deaths, equivalent to around 666 deaths per year, would potentially be avoided if all mothers had the lowest deprivation level (Table 6 and Figure 2).

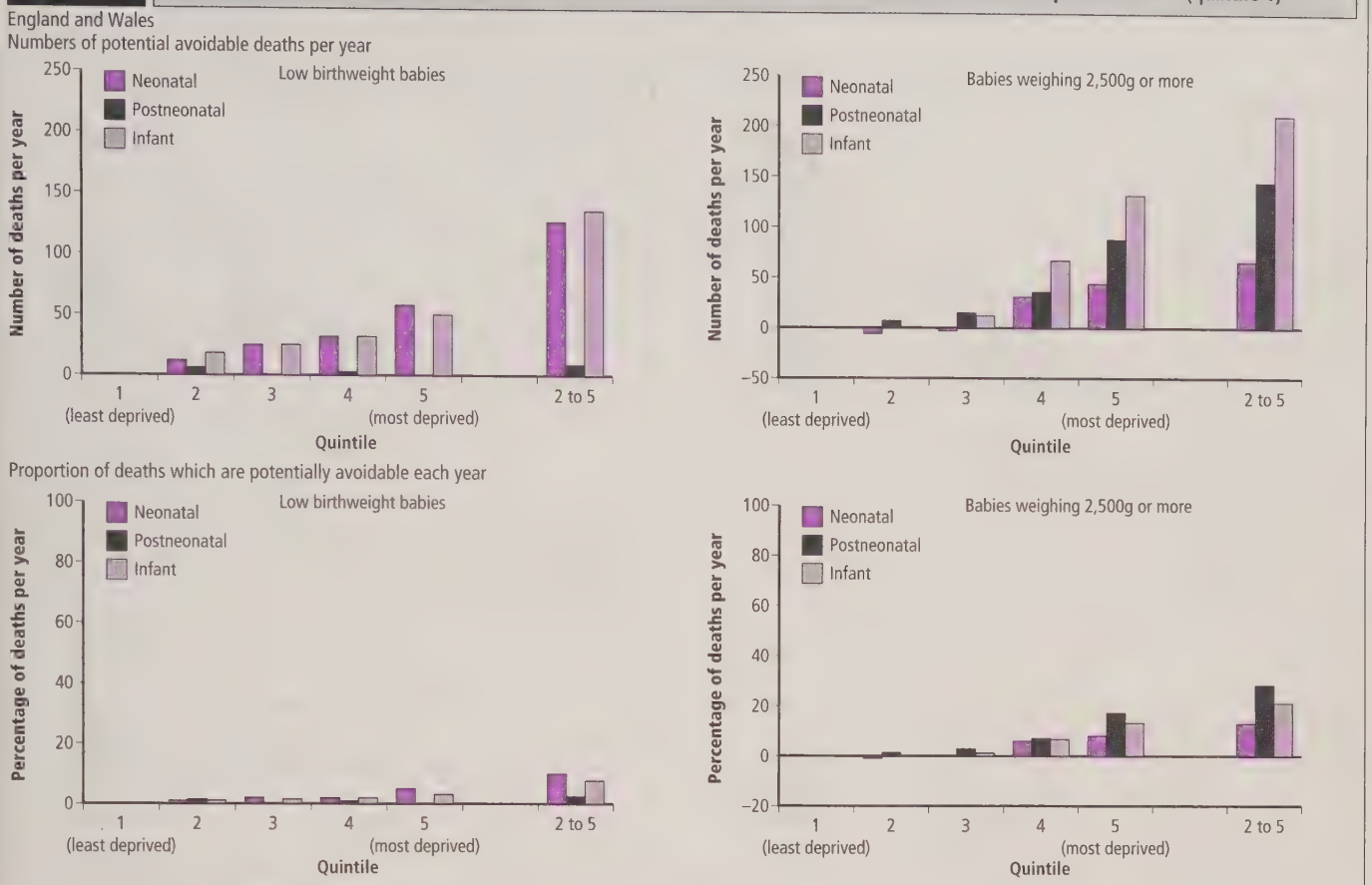
There was strong evidence of an interaction between deprivation and (separately) birthweight, gestation and small-for-gestational-age (Table 7). Among low birthweight babies, there was only a very weak, if any, association between deprivation and infant mortality risk. Among babies weighing 2,500 grams or more, however, there was a marked trend of increasing risk of infant mortality with increasing deprivation, strongest in the postneonatal period; ORs (95 per cent CI) rising steadily to 1.35 (1.09, 1.67) and 1.83 (1.44, 2.32) for the most deprived compared to least deprived groups in the neonatal and postneonatal periods respectively (Table 7 and Figure 3). With regard to actual impact on infant mortality in the general population, however, in the neonatal period more deaths could potentially be avoided per year among low birthweight babies than babies

Figure 3 Association between risk of postneonatal death and deprivation, stratified by birthweight



Note: 2005 and 2006 data are adjusted for maternal age, registration status, sex and ethnicity of child.

Figure 4 Estimated number and proportion of deaths in low birthweight babies (<2,500g) and babies weighing 2,500g or more at birth, which would potentially be avoided per year if their deprivation level was reduced to the lowest deprivation level (quintile 1)



Note: 2005 and 2006 data are adjusted for maternal age, registration status, sex and ethnicity of child.

weighing 2,500 grams or more if the level of deprivation were reduced within each category to that of the least deprived group (127 deaths versus 66 deaths per year). In the postneonatal period, more deaths could potentially be avoided in this way among non-low birthweight babies (145 versus 9 deaths per year) (Table 7 and Figure 4).

With regard to the interaction between deprivation and gestation, in the neonatal period there was a steadily increasing trend in mortality risk with increasing deprivation among preterm babies (Table 7). For term babies, although odds ratios were raised in the two most deprived categories, there was no evidence of a difference in mortality risk among the first three deprivation groups. Conversely, in the postneonatal period, there was no consistent trend of mortality risk with deprivation among preterm babies (though the odds ratios were raised for all categories relative to the least deprived group), but there was a marked trend of increasing mortality risk with increasing levels of deprivation among babies who were not preterm. Figure 5 displays the numbers and proportions of deaths attributable to deprivation in preterm and term babies. If deprivation were reduced to the lowest level, 227 neonatal deaths could be avoided in the preterm group (representing 18 per cent of all deaths in this group), and 131 postneonatal deaths could be avoided in the term group (24 per cent of all deaths in this group).

Examining the interaction between deprivation and small-for-gestational-age, the effect of deprivation was much stronger in non-small-for-gestational-age than small-for-gestational-age babies in both neonatal and postneonatal periods (Table 7). Among small-for-gestational-age babies there was a shallow trend of increasing risk with increasing level of deprivation in the neonatal period, but in the postneonatal period there was no evidence of an effect of deprivation on risk of death. Among babies whose sex-specific weight for gestation was at the 5th centile or above, there were marked trends of increasing odds ratios with increasing level of deprivation in both time periods (Table 7). With regard to potentially avoidable deaths, if deprivation levels reduced to the lowest level, 303 neonatal deaths and 220 postneonatal deaths in non-small-for-gestational-age babies could be saved. These numbers represent 21 per cent and 30 per cent respectively of all deaths in these groups (Table 7).

Socio-economic status

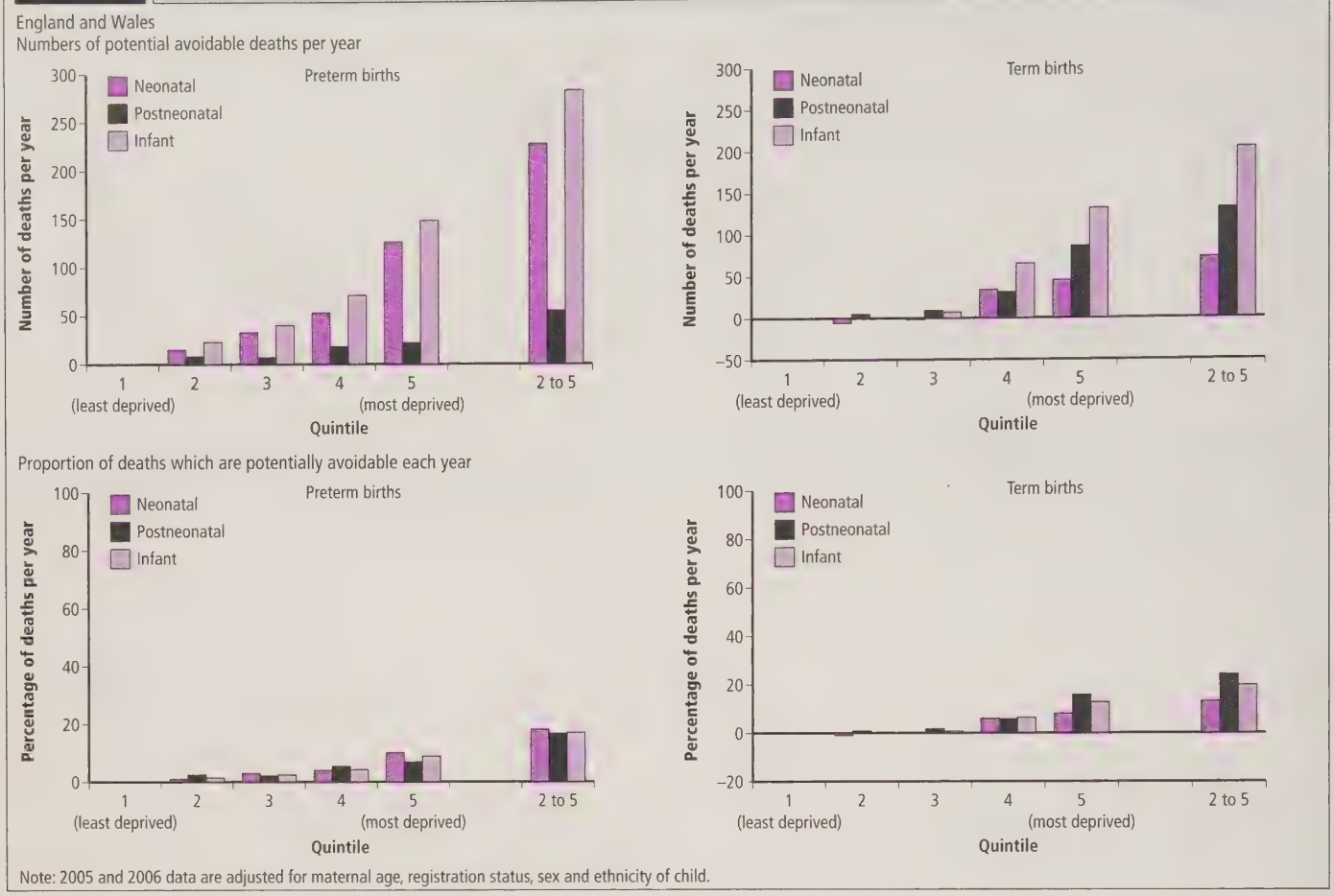
Among the 10 per cent sample of births where the mother and father were both named on the birth certificate (inside marriage, or outside marriage registered by both parents), and hence where NS-SEC could be coded, there was a highly statistically significant independent association between NS-SEC and risk of infant mortality, similar in both neonatal and postneonatal periods, with a marked trend of increasing risk of infant mortality with decreasing socio-economic class (Tables 4 to 6). As with deprivation, there was evidence of some confounding of this relationship by maternal age, sex of baby, registration status and ethnicity of the baby, but the association remained after adjustment for these factors, though many of the odds ratios were no longer statistically significant. There was strong evidence of an interaction between NS-SEC and (separately) birthweight, gestation and smallness-for-gestational-age, with similar patterns of odds ratios to those observed for deprivation status. However due to small numbers, the results are not presented here.

Association between infant mortality and potential confounding factors/proximal risk factors (birthweight and gestation)

Confounding factors

As expected, all potential confounding factors under examination

Figure 5 Estimated number and proportion of deaths in preterm (<37 weeks) and term (37+ weeks) babies which would potentially be avoided per year if their deprivation level was reduced to the lowest deprivation level (quintile 1)



Note: 2005 and 2006 data are adjusted for maternal age, registration status, sex and ethnicity of child.

were strongly independently related to risk of infant mortality in both neonatal and postneonatal periods (Tables 4 to 6). Relative risks of mortality tended to be highest for babies where the mother was young (aged under 25) or older (aged 40 and over) (compared with mothers aged 25–29), where the parents were unmarried (particularly where the birth was registered by the mother alone or registered by both parents living at different addresses, compared with those where the parents were married), and where mothers were born outside the UK (compared with those born in the UK). Large increases in mortality odds ratios for babies described by their mother as being of non-White ethnic origin were also observed (relative to those described as White), particularly among those described as Asian or Black, and odds ratios for male babies were consistently high relative to females. None of these effects was substantially reduced in either the neonatal or the postneonatal group, after adjustment for maternal age, baby's sex, registration status, deprivation and ethnicity of the baby (as appropriate). Maternal country of birth could not be included in any models including ethnicity of the baby, due to the high correlation between these factors. However, with the exception of baby's sex, where estimates remained almost unchanged, when birthweight or gestation were additionally included in the models (Model 4 and 5) all odds ratios tended to reduce sharply, though the overall effects of registration status, maternal age and baby's ethnicity remained statistically significant independent predictors of mortality (all $P<0.03$). Baby's sex was a highly significant independent risk factor for infant mortality, apparently unaffected by any other factor available in this analysis ($P<0.005$ for neonatal, postneonatal and infant mortality).

Registration status:

In the neonatal period, for sole registrations, and joint registrations by parents living at different addresses, there was no apparent raised risk after additional adjustment for birthweight or gestation plus maternal age, deprivation, and sex and ethnicity of the baby. Babies whose parents lived at the same address, but were not married, had an apparent 14 per cent and 20 per cent raised risk compared with those born inside marriage after additionally controlling for these factors (ORs (95 per cent CI): 1.14 (1.04, 1.25) and 1.20 (1.10, 1.31) adjusted for birthweight and gestation respectively) (Table 4). This rather unexpected result may simply be a chance finding due to the large number of statistical estimations involved in the analyses. Conversely, in the postneonatal period there was no apparent increase in risk after additional adjustment for birthweight or gestation among joint registrations with the same address relative to births inside marriage. However, sole registrations had 67 per cent and 82 per cent increased risks even after further adjustment for these more proximal risk factors (ORs (95 per cent CI): 1.67 (1.40, 1.98) and 1.82 (1.52, 2.15) adjusted additionally for birthweight and gestation respectively). Calculations of excess deaths showed that after full adjustment around 5 per cent of all postneonatal deaths were independently associated with sole registration (Table 5). Babies whose parents did not live at the same address also had raised risks of postneonatal mortality (ORs (95 per cent CI): 1.32 (1.11, 1.57) and 1.40 (1.17, 1.66) after additional adjustment for birthweight and gestation respectively) (Table 5).

Maternal age:

In the neonatal period, odds ratios for very young (<20 years) and older (40 and over) mothers were raised relative to mothers aged 25–29 after additional adjustment for birthweight, but not statistically significantly so (except for a borderline result for mothers aged 40 and over) (Table 4). In the postneonatal period, odds ratios were significantly raised for both mothers under the age of 25 (ORs (95 per cent CI) 1.38 (1.14, 1.67) and

1.36 (1.18, 1.57) (maternal age <20), and 1.41 (1.16, 1.71) and 1.39 (1.21, 1.61) (maternal age 20–24)), and for those aged 35 and over (ORs (95 per cent CI) 1.23 (1.04, 1.45) and 1.22 (1.04, 1.44) (maternal age 35–39), after adjustment for birthweight or gestation respectively) (Table 5). Over 12 per cent of postneonatal deaths could be independently attributed to maternal age above or below age 25–29 (Table 5).

Baby's sex:
Inclusion of other factors in the model made very little difference to the effect of sex. In both neonatal and postneonatal periods relative risk of mortality was consistently and independently raised among boys, risks being around 15–30 per cent higher than those of girls (ORs (95 per cent CI): 1.33 (1.25, 1.43) and 1.12 (1.04, 1.20) in the neonatal period, and 1.28 (1.16, 1.43) and 1.16 (1.06, 1.30) in the postneonatal period, after adjustment for all other risk factors, and birthweight and gestation respectively) (Tables 4 and 5). In the fully adjusted model including birthweight, male sex accounted for 13 per cent of all infant deaths (Table 6).

Ethnicity of the baby:
Babies of non-White ethnic origin (as described by the mother) had raised odds ratios in both neonatal and postneonatal periods, though this increase was restricted to babies described as Asian in the latter period. After adjustment for all other potential confounders and birthweight, ORs (95 per cent CIs) in the neonatal period were up to 40 per cent higher compared with babies described as White (1.13 (1.00, 1.27), 1.42 (1.24, 1.64) and 1.11 (0.98, 1.25) in Asian, Black and Other non-White babies respectively). Adjusted additionally for gestation rather than birthweight, the estimates were even higher, at 1.63 (1.44, 1.85), 1.60 (1.40, 1.83) and 1.24 (1.10, 1.40) (Table 4). In the postneonatal period, the corresponding odds ratios for babies described as Asian were 1.49 (1.26, 1.77) and 1.86 (1.57, 2.20) respectively. Around 5 per cent of all infant deaths in the population could be attributed to non-white ethnicity, independent of birthweight (Table 6).

Proximal risk factors (further along the causal pathway than deprivation) – gestation and birthweight
Almost 60 per cent of all infant deaths could be attributed to either low birthweight or preterm delivery (Table 6; 'Excess deaths %' column; Model 3).

Birthweight:
Birthweight was a major risk factor for infant mortality – having a greater effect than any other factor except for gestation (there is considerable overlap between the two factors) (Tables 4 to 6). Maternal age- and sex-adjusted odds ratios (relative to babies weighing 2,500 to 4,499 grams) rose to around 230 for neonatal mortality and over 45 for postneonatal mortality in extremely low birthweight infants (Tables 4 and 5 respectively). There was, however, a highly statistically significant interaction between the effects of birthweight (low birthweight) and Carstairs deprivation on infant mortality, stronger than that between gestation and deprivation, and present in all time periods (all P≤0.01) (Table 8). The effect of low birthweight on infant mortality decreased markedly with increasing levels of deprivation, adjusted (for maternal age, registration status and baby's sex and ethnicity) odds ratios decreasing by a third between the highest (least deprived) and lowest (most deprived) groups from 28.73 (24.00, 34.39) to 19.46 (17.65, 21.45). The effect modification was most marked in the postneonatal period, where adjusted relative risks reduced by almost half from the least to most deprived groups, but was also substantial in the neonatal period, with a 15 to 30 per cent decline between the effect of low birthweight in the top and bottom deprivation categories. Excess neonatal deaths attributed to low birthweight per year varied between 460 for the most deprived and 121 for the least deprived, and equivalent figures for postneonatal deaths were 121 for the most deprived and 32 for the least deprived (Table 8).

Gestational age:
The effect of gestation on risk of infant mortality was higher than that of any other factor by an order of magnitude (Tables 4 to 6), with maternal age- and sex-adjusted odds ratios (relative to term babies) of up to around 650 for neonatal mortality and over 90 for postneonatal mortality in extremely preterm babies (Tables 4 and 5 respectively).

Again, there was a statistically significant interaction between the effects of gestation (preterm delivery) and Carstairs deprivation index on infant mortality (P=0.01) (Table 8). This was driven by a strong interaction between these factors in the postneonatal period (P= 0.03) where there was a 30 per cent decline in adjusted (for maternal age, registration status and baby's sex and ethnicity) odds ratios between the least deprived (10.13 (7.28, 14.09)) and most deprived (7.40 (6.27, 8.74)) groups. There was a large number of postneonatal deaths attributed to preterm delivery in the most deprived group (104) compared to that in the least deprived group (27), although the proportions of these excess deaths were similar at around 30 per cent for each group. There was no evidence of an interaction between gestation and deprivation in the neonatal period (P=0.14) (Table 8).

Small-for-gestational-age:
Live-born babies whose weight was below the 5th centile of the distribution expected for their sex and gestation had more than three times the risk of dying in the first year of life as those whose weight was above this level (Tables 4 to 6). Though the odds ratios in all age periods were high, their magnitude in relation to those of absolute birthweight and gestation indicate that the latter are the more critical factors in terms of predicting risk of infant death. As with gestation and birthweight, there was an interaction between the effects of small-for-gestational-age and Carstairs deprivation on infant mortality, most marked in the postneonatal period where the effect of being small-for-gestational-age in the least deprived group was almost double that in the most deprived group (OR (95 per cent CI): 5.40 (3.49, 8.36) versus 2.88 (2.35, 3.53)). The excess number of postneonatal deaths attributed to small-for-gestational-age ranged between 11 for the least deprived group and 42 for the most deprived group (Table 8).

Discussion

Inequalities in infant mortality in England and Wales in 2005 and 2006 by deprivation, and socio-economic and biological factors was investigated in this analysis. Multivariate analysis was undertaken to obtain information on the independent contributions of individual factors to the risk of death. The approach was to use both the strength of association between various factors and risk of death, measured as adjusted odds ratios, and the theoretical impact of these factors on the number and proportion of 'excess' deaths in the population that could potentially be saved, or avoided, if the factor was not present.

The emphasis of this work was on socio-economic inequalities in infant mortality. The national health inequalities PSA target was set in 2001 and was updated in 2004. The target is to 'Reduce health inequalities by 10 per cent by 2010 as measured by infant mortality and life expectancy at birth'.[6] More specifically this target is underpinned by an objective to reduce by at least 10 per cent the gap in mortality between the routine and manual group and the population as a whole by 2010. A second objective is, also by 2010, to reduce by at least 10 per cent the gap in life expectancy at birth between the fifth of areas with the worst health and deprivation indicators (the Spearhead Group) and the population as a whole.

This analysis was limited by the number of births coded to NS-SEC (only 10 per cent are coded), and hence the main analyses were on the area level of deprivation, using the Carstairs index of deprivation.

Despite its limitations, this indicator performed well as a marker for socio-economic status and, since it was available for all births and deaths, it enabled multivariate analyses to be conducted with good statistical power.

The findings are consistent with those of other studies based on England and Wales data that have found variation in infant mortality by birthweight, gestation, mother's age, registration status, sex and ethnicity of the child.[4,10,11] The very strong links between risk of neonatal death and both low birthweight and preterm delivery were confirmed. After controlling for maternal age and sex of child, over two-thirds of all neonatal deaths could be attributed to these factors in 2005 and 2006. The multivariate approach also confirmed independent effects of registration status, ethnicity of child, and male sex, after allowing for birthweight or gestational age and other confounding factors.

Low birthweight and preterm delivery are the main proximal risk factors for death under one year, especially under one month, and both factors are highly associated with socio-economic status and deprivation. The finding that approximately one quarter of all infant deaths could be avoided if all mothers had the lowest deprivation level is at least partly mediated through low birthweight and/or prematurity. When the impact of deprivation on risk of death over and above that of low birthweight and preterm delivery was examined, perhaps not surprisingly, evidence of interaction was found. Stratified analyses, for example within term babies only, revealed residual associations between deprivation and risk of death with a consistent pattern of stronger associations for babies who were not low birthweight, and term, than for babies who were low birthweight or preterm. These associations were much stronger for postneonatal than for neonatal death, an observation reported in a previous study by Leon.[18] An estimated 28 per cent of postneonatal deaths in babies weighing 2,500 grams or more, equivalent to 145 postneonatal deaths per year in this group, could be explained by deprivation levels being above the lowest (least deprived) level. Similarly, 24 per cent of postneonatal deaths in term babies, equivalent to 131 postneonatal deaths among term babies per year, were explained by deprivation levels above the least deprived category. These deaths are potentially avoidable if the deprivation gap is eliminated for all mothers.

There was no information from birth, death or NN4B records on more specific, and possibly more proximal, environmental, social, economic or behavioural exposures related to deprivation, or on access to and uptake of health or social care, which may explain these findings. Smoking, obesity, poor nutrition and inadequate antenatal care are likely to be more prevalent in groups of mothers with higher levels of deprivation, and may contribute to the effects reported here. Further work to investigate the explanatory causal pathways between deprivation and infant mortality, perhaps for specific causes of death, is required. This will inform interventions to reduce the inequalities in infant death described in this paper and thus contribute towards reducing the infant mortality gap identified in the PSA target.[6]

Key findings

- Among all singleton live births in England and Wales, 2005–06, as levels of deprivation increased, mothers tended to be younger, less likely to be married or living with the father, and more likely to be non-UK-born
- Babies who were Asian, Black or of other non-white ethnicity tended to have higher levels of deprivation
- Preterm birth, low birthweight and small-for-gestational-age increased in prevalence with increasing levels of deprivation
- Deprivation, births outside marriage, non-white ethnicity of infant, maternal age under the age of 20 and male sex were all independently associated with an increased risk of infant mortality
- Lower birthweight, earlier gestation and small-for-gestational-age were strongly associated with infant mortality, with the effect of birthweight and gestation most marked in the neonatal period
- The effect of deprivation on death in the first year of life was partly confounded by maternal age, registration status/marital type and ethnicity of baby, but a trend of increasing risk of death with increasing deprivation persisted after adjustment. One quarter of all deaths under one year would potentially be avoided if all births were to women with the lowest level of deprivation
- Trends of increasing mortality risk with increasing deprivation tended to be strongest in the postneonatal period
- Statistically significant interactions were found between deprivation and low birthweight, preterm and small-for-gestational-age. There was a stronger association between deprivation and infant mortality among babies who were not low birthweight, and among non-small-for-gestational-age babies. With regard to gestation, the strongest effect of deprivation was observed among preterm births in the neonatal period, and among term births in the postneonatal period
- Around 28 per cent of postneonatal deaths (45 per year) among non-low birthweight babies, and 24 per cent of postneonatal deaths (131 per year) among babies born at term, would potentially be avoided if all levels of deprivation were reduced to that of the least deprived group
- The National Statistics Socio-economic Classification showed similar associations with infant mortality to deprivation, but small numbers prohibited the calculation of fully adjusted models using this factor

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Table 4

Unadjusted and adjusted odds ratios (OR) for the association between social and biological risk factors and singleton neonatal mortality, 2005–06

England and Wales

	Neonatal mortality						
	Unadjusted	Model 1	Model 2	Model 3	Model 4	Model 5	Excess deaths %[3]
		Adjusted for age and sex[1]	Model 1 + adjusted for deprivation and registration status[1,2]	Model 2 + adjusted for ethnicity of baby[1]	Model 3 + adjusted for interaction between birthweight and deprivation	Model 3 + adjusted for interaction between gestation and deprivation	
	OR (95% CI)	OR (95% CI)	OR (95% CI)	OR (95% CI)	OR (95% CI)	OR (95% CI)	
Deprivation and socio-economic status							
Carstairs deprivation index							
1 (least deprived)	1.00	1.00	1.00	1.00	–	–	Model 3
2	1.14 (1.00, 1.30)*	1.13 (0.99, 1.30)	1.12 (0.98, 1.28)	1.07 (0.92, 1.23)			0.84
3	1.29 (1.14, 1.47)***	1.27 (1.12, 1.44)***	1.25 (1.10, 1.42)**	1.19 (1.04, 1.37)*	Pooled odds ratios not calculated due to interaction. See Table 8	Pooled odds ratios not calculated due to interaction. See Table 8	2.61
4	1.62 (1.43, 1.82)***	1.57 (1.39, 1.77)***	1.53 (1.36, 1.72)***	1.41 (1.24, 1.61)***			6.85
5 (most deprived)	2.00 (1.79, 2.24)	1.94 (1.73, 2.17)***	1.90 (1.69, 2.13)***	1.54 (1.36, 1.75)***			12.85
							23.16
NS-SEC							
Higher and professional	1.00	1.00	1.00	1.00			Model 3
Intermediate	1.04 (0.75, 1.45)	1.05 (0.75, 1.47)	1.03 (0.74, 1.44)	1.00 (0.70, 1.43)	Pooled odds ratios not calculated due to interaction with birthweight	Pooled odds ratios not calculated due to interaction with gestation	–
Routine and manual	1.54 (1.20, 1.98)*	1.58 (1.22, 2.06)*	1.53 (1.17, 2.00)*	1.33 (1.00, 1.77)			11.06
Other (unemployed/ students/ns)	2.17 (1.47, 3.18)***	2.19 (1.47, 3.27)***	2.18 (1.46, 3.26)***	1.67 (1.08, 2.58)*			4.12
							15.18
Potential confounding factors							
Registration type/Marital status							Model 3 Model 4 Model 5
Married	1.00	1.00	1.00	1.00	1.00	1.00	
Sole registration[4]	1.34 (1.18, 1.51)***	1.24 (1.10, 1.41)**	1.14 (1.00. 1.29)*	1.26 (1.10, 1.45)*	0.86 (0.75, 1.00)*	0.93 (0.81, 1.07)	1.69 –1.33 –0.62
Joint registration/same address[5]	1.25 (1.16, 1.34)***	1.20 (1.11, 1.29)***	1.18 (1.09, 1.28)***	1.36 (1.24, 1.48)***	1.14 (1.04, 1.25)*	1.20 (1.10, 1.31)***	7.99 3.71 5.03
Joint registration/ different address[5]	1.50 (1.35, 1.66)***	1.39 (1.24, 1.55)***	1.28 (1.14, 1.43)***	1.43 (1.27, 1.62)***	1.05 (0.93, 1.19)	1.13 (1.00, 1.28)	3.53 0.56 1.35
							13.21 2.93 5.76
Maternal age (years)							Model 3 Model 4 Model 5
<20	1.28 (1.14, 1.45)***	1.28 (1.14, 1.44)***	1.10 (0.97, 1.25)	1.16 (1.01, 1.32)*	1.10 (0.95, 1.26)	1.13 (0.99, 1.30)	1.28 0.85 1.07
20–24	1.05 (0.96, 1.15)	1.05 (0.95, 1.15)	0.95 (0.86, 1.05)	0.96 (0.89, 1.06)	0.94 (0.85, 1.04)	0.98 (0.88, 1.08)	–0.87 –1.34 –0.43
25–29	1.00	1.00	1.00	1.00	1.00	1.00	– – –
30–34	0.81 (0.74, 0.89)***	0.81 (0.74, 0.89)***	0.89 (0.81, 0.97)*	0.92 (0.84, 1.02)	0.94 (0.85, 1.03)	0.90 (0.81, 0.99)*	–2.09 –1.54 –2.67
35–39	0.88 (0.79, 0.97)	0.88 (0.79, 0.97)*	0.97 (0.88, 1.08)	1.03 (0.92, 1.15)	0.98 (0.87, 1.10)	0.95 (0.85, 1.06)	0.43 –0.30 –0.77
40 and over	1.20 (1.01, 1.41)	1.20 (1.01, 1.41)*	1.31 (1.11, 1.54)**	1.41 (1.18, 1.68)***	1.21 (1.00, 1.45)*	1.17 (0.98, 1.41)	1.24 0.74 0.42
							–0.01 –1.59 –2.38
Maternal country of birth							
UK	1.00	1.00	1.00	Unable to be calculated due to high correlation of country of birth & ethnicity	Unable to be calculated due to high correlation of country of birth & ethnicity	Unable to be calculated due to high correlation of country of birth & ethnicity	Model 2
Non-UK	1.26 (1.17, 1.35)***	1.29 (1.19, 1.38)***	1.21 (1.12, 1.31)***				4.43
Sex of baby							
Female	1.00	1.00	1.00	1.00	1.00	1.00	Model 3 Model 4 Model 5
Male	1.22 (1.14, 1.30)***	1.22 (1.14, 1.30)***	1.22 (1.14, 1.30)***	1.22 (1.14, 1.30)***	1.33 (1.25,1.43)***	1.12 (1.04,1.20)***	10.08 14.58 5.69
Ethnicity of baby							
White	1.00	1.00	1.00		1.00	1.00	Model 2 Model 4 Model 5
Asian (Bangladeshi/ Pakistani/ Indian)	1.76 (1.58, 1.95)***	1.77 (1.60, 1.97)***	1.83 (1.62, 2.06)***	Equivalent to Model 2	1.13 (1.00, 1.27)	1.63 (1.44, 1.85)***	5.92 1.50 5.04
Black African/ Black Caribbean	1.99 (1.75, 2.26)***	1.99 (1.76, 2.26)***	1.74 (1.52, 1.99)***		1.42 (1.24, 1.64)***	1.60 (1.40, 1.83)***	3.50 2.43 3.08
Other	1.34 (1.20, 1.50)***	1.34 (1.19, 1.50)***	1.28 (1.14, 1.44)***		1.11 (0.98, 1.25)	1.24 (1.10, 1.40)***	2.29 1.04 2.03
							11.71 4.97 10.16
Factors on causal pathway							
Birthweight (grams)							Model 1
<1,500	232.46 (215, 251.11)***	231.70 (214.46, 250.33)***					56.94
1,500–2,499	8.70 (7.81, 9.68)*	8.71 (7.82, 9.70)***	Interaction between birthweight and deprivation. See Table 7	Interaction between birthweight and deprivation. See Table 7	Interaction between birthweight and deprivation. See Table 7	Interaction between birthweight and deprivation. See Table 7	12.15
2,500–4,499	1.00	1.00					–
4,500 and over	0.99 (0.63, 1.56)	0.96 (0.61, 1.52)					–0.02
							69.06
Gestation (weeks)							Model 1
21–27	654.82 (602.00, 712. 27)***	649.46 (596.98, 706.56)***					50.03
28–31	43.24 (38.15, 49.00)***	42.74 (37.71, 48.33)***	Interaction between gestation and deprivation. See Table 7	Interaction between gestation and deprivation. See Table 7	Interaction between gestation and deprivation. See Table 7	Interaction between gestation and deprivation. See Table 7	8.91
32–36	7.20 (6.42, 8.07)***	7.14 (6.47, 7.99)***					9.79
37–41	1.00	1.00					–
42 and over	1.02 (0.77, 1.35)	1.01 (0.77, 1.34)					0.01
							68.74
Small for gestational age							Model 1
SGA (<5%)	3.26 (2.96, 3.59)***	3.19 (2.89, 3.51)***	Interaction between SGA and deprivation. See Table 7	Interaction between SGA and deprivation. See Table 7	Interaction between SGA and deprivation. See Table 7	Interaction between SGA and deprivation. See Table 7	9.83
Not SGA (≥5%)	1.00	1.00					–

* p <0.05 ** p <0.005 *** p <0.001

1 Adjusted for covariate only where it is not the main explanatory variable in model.
2 Carstairs deprivation not adjusted for where NS-SEC is main explanatory variable.
3 Proportion of all deaths in population which potentially would be avoided if risk was same as that in baseline group.
4 Birth takes place outside marriage, only mother registers the birth.
5 Birth takes place outside marriage, both mother and father register the birth.

Table 5

Unadjusted and adjusted odds ratios (OR) for the association between social and biological risk factors and singleton postneonatal mortality, 2005–06

England and Wales

	Postneonatal mortality						
	Unadjusted	Model 1	Model 2	Model 3	Model 4	Model 5	Excess deaths %[3]
		Adjusted for age and sex[1]	Model 1 + adjusted for deprivation and registration status[1,2]	Model 2 + adjusted for ethnicity of baby[1]	Model 3 + adjusted for interaction between birthweight and deprivation	Model 3 + adjusted for interaction between gestation and deprivation	
	OR (95% CI)	OR (95% CI)	OR (95% CI)	OR (95% CI)	OR (95% CI)	OR (95% CI)	
Deprivation and socio-economic status							
Carstairs deprivation index							
1 (least deprived)	1.00	1.00	1.00	1.00			Model 3
2	1.18 (0.97, 1.44)	1.15 (0.94, 1.40)	1.13 (0.93, 1.38)	1.16 (0.94, 1.43)	Pooled odds ratios not calculated due to interaction. See Table 8	Pooled odds ratios not calculated due to interaction. See Table 8	1.73
3	1.32 (1.09, 1.60)**	1.25 (1.03, 1.50)*	1.22 (1.00, 1.47)*	1.18 (0.97, 1.45)			2.41
4	1.71 (1.43, 2.04)***	1.55 (1.30, 1.86)***	1.49 (1.24, 1.78)***	1.40 (1.16, 1.70)**			6.72
5 (most deprived)	2.21 (1.88, 2.61)***	1.97 (1.66, 2.34)***	1.86 (1.57, 2.20)***	1.62 (1.35, 1.96)***			14.62
							25.48
NS-SEC							
Higher and professional	1.00	1.00	1.00	1.00			Model 3
Intermediate	1.76 (1.07, 2.88)*	1. 59 (0.96, 2.62)	1.61 (0.98, 2.66)	1.59 (0.94, 2.67)	Pooled odds ratios not calculated due to interaction with birthweight	Pooled odds ratios not calculated due to interaction with gestation	8.37
Routine and manual	1.72 (1.12, 2.64)*	1.41 (0.90, 2.21)	1.44 (0.91, 2.27)	1.39 (0.86, 2.24)			11.81
Other (unemployed/ students/ns)	2.63 (1.41, 4.91)*	1.96 (1.02, 3.78)*	2.00 (1.04, 3.87)*	1.82 (0.91, 3.65)			4.74
							24.93
Potential confounding factors							
Registration type/Marital status							
Married	1.00	1.00	1.00	1.00	1.00	1.00	Model 3 Model 4 Model 5
Sole registration[4]	2.38 (2.06, 2.74)***	1.96 (1.68, 2.29)***	1.82 (1.56, 2.12)***	2.07 (1.75, 2.46)***	1.67 (1.40, 1.98)***	1.82 (1.52, 2.15)***	7.05 5.47 6.15
Joint registration/ same address[5]	1.13 (1.01, 1.27)*	1.00 (0.89, 1.13)	1.00 (0.89, 1.13)	1.20 (1.05, 1.37)*	1.09 (0.95, 1.25)	1.14 (1.00, 1.30)	4.34 2.15 3.20
Joint registration/ different address[5]	1.74 (1.51, 2.02)***	1.42 (1.21, 1.67)***	1.34 (1.14, 1.57)***	1.59 (1.34, 1.89)***	1.32 (1.11, 1.57)*	1.40 (1.17, 1.66)***	4.81 3.14 3.70
							16.20 10.77 13.05
Maternal age (years)							Model 3 Model 4 Model 5
<20	1.79 (1.52, 2.13)***	1.79 (1.52, 2.13)***	1.38 (1.16, 1.66)***	1.40 (1.16, 1.70)***	1.38 (1.14, 1.67)**	1.41 (1.16, 1.71)***	3.22 3.10 3.28
20–24	1.53 (1.34, 1.74)***	1.53 (1.34, 1.74)***	1.35 (1.18, 1.54)***	1.36 (1.18, 1.57)***	1.36 (1.18, 1.57)***	1.39 (1.21, 1.61)***	7.00 7.00 7.42
25–29	1.00	1.00	1.00	1.00	1.00	1.00	– – –
30–34	0.82 (0.71, 0.94)*	0.82 (0.71, 0.94)*	0.89 (0.77, 1.03)	0.96 (0.83, 1.11)	0.97 (0.83, 1.12)	0.95 (0.82, 1.11)	–0.88 –0.65 –1.11
35–39	1.02 (0.87, 1.19)	1.02 (0.87, 1.19)	1.13 (0.97, 1.32)	1.27 (1.08, 1.50)**	1.23 (1.04, 1.45)*	1.22 (1.04, 1.44)*	3.15 2.77 2.67
40 and over	1.04 (0.79, 1.37)	1.04 (0.79, 1.37)	1.06 (0.80, 1.41)	1.10 (0.81, 1.50)	1.03 (0.76, 1.40)	1.01 (0.74, 1.37)	0.29 0.09 0.03
							12.78 12.32 12.29
Maternal country of birth							
UK	1.00	1.00	1.00	Unable to be calculated due to high correlation between country of birth & ethnicity	Unable to be calculated due to high correlation between country of birth & ethnicity	Unable to be calculated due to high correlation between country of birth & ethnicity	Model 2
Non-UK	1.09 (0.97, 1.22)	1.15(1.03, 1.28)*	1.04 (0.92, 1.18)				0.88
Sex of baby							
Female	1.00	1.00	1.00	1.00	1.00	1.00	Model 3 Model 4 Model 5
Male	1.23 (1.12, 1.37) ***	1.23 (1.12, 1.37) ***	1.23 (1.12, 1.37) ***	1.22 (1.10,1.35)***	1.28 (1.16, 1.43)***	1.16 (1.06,1.30)*	10.17 12.43 7.91
Ethnicity of baby							
White	1.00	1.00	1.00		1.00	1.00	Model 2 Model 4 Model 5
Asian (Bangladeshi/ Pakistani/ Indian)	1.86 (1.62, 2.15)***	1.89 (1.63, 2.18)***	1.95 (1.65, 2.30)***	Equivalent to Model 2	1.49 (1.26, 1.77)***	1.86 (1.57, 2.20)***	6.89 4.65 6.54
Black African/ Black Caribbean	1.44 (1.17, 1.77)**	1.47 (1.19, 1.81)***	1.17 (0.95, 1.45)		1.09 (0.88, 1.36)	1.14 (0.92, 1.41)	0.88 0.50 2.81
Other	1.24 (1.05, 1.46)*	1.24 (1.05, 1.47)*	1.13 (0.95, 1.34)		1.06 (0.90, 1.26)	1.12 (0.94, 1.32)	1.14 0.56 1.22
							8.92 5.72 10.58
Factors on causal pathway							
Birthweight (grams)							Model 1
<1,500	46.41 (41.23, 52.24)***	45.55 (40.46, 51.29)***					21.74
1,500–2,499	6.10 (5.39, 6.89)***	5.96 (5.27, 6.75)***	Interaction between birthweight and deprivation. See Table 7	Interaction between birthweight and deprivation. See Table 7	Interaction between birthweight and deprivation. See Table 7	Interaction between birthweight and deprivation. See Table 7	16.13
2,500–4,499	1.00	1.00					–
4,500 and over	0.53 (0.28, 0.99)*	0.53 (0.28, 0.99)*					–0.50
							37.37
Gestation (weeks)							Model 1
21–27	95.45 (82.76, 110.78)***	93.40 (80.95, 107.76)***					14.16
28–31	17.00 (14.16, 20.39)***	16.45 (13.70, 19.74)***	Interaction between gestation and deprivation. See Table 7	Interaction between gestation and deprivation. See Table 7	Interaction between gestation and deprivation. See Table 7	Interaction between gestation and deprivation. See Table 7	7.07
32–36	4.76 (4.17, 5.43)***	4.66 (4.08, 5.32)***					12.54
37–41	1.00	1.00					–
42 and over	0.88 (0.66, 1.19)	0.88 (0.65, 1.18)					–0.36
							33.41
Small for gestational age							Model 1
SGA (<5%)	3.29 (2.96, 3.66)***	3.13 (2.83, 3.51)***	Interaction between SGA and deprivation. See Table 7	Interaction between SGA and deprivation. See Table 7	Interaction between SGA and deprivation. See Table 7	Interaction between SGA and deprivation. See Table 7	11.45
Not SGA (≥5%)	1.00	1.00					–

* p <0.05 ** p <0.005 *** p <0.001

1 Adjusted for covariate only where it is not the main explanatory variable in model.
2 Carstairs deprivation not adjusted for where NS-SEC is main explanatory variable.
3 Proportion of all deaths in population which potentially would be avoided if risk was same as that in baseline group.
4 Birth takes place outside marriage, only mother registers the birth.
5 Birth takes place outside marriage, both mother and father register the birth.

Table 6

Unadjusted and adjusted odds ratios (OR) for the association between social and biological risk factors and singleton infant mortality, 2005–06

England and Wales

	Infant mortality						Excess deaths %[3]
	Unadjusted	Model 1	Model 2	Model 3	Model 4	Model 5	
		Adjusted for age and sex[1]	Model 1 + adjusted for deprivation and registration status[1,2]	Model 2 + adjusted for ethnicity of baby[1]	Model 3 + adjusted for interaction between birthweight and deprivation	Model 3 + adjusted for interaction between gestation and deprivation	
	OR (95% CI)	OR (95% CI)	OR (95% CI)	OR (95% CI)	OR (95% CI)	OR (95% CI)	
Deprivation and socio-economic status							
Carstairs deprivation index							
1 (least deprived)	1.00	1.00	1.00	1.00			Model 3
2	1.15 (1.03, 1.29)*	1.14 (1.02, 1.27)*	1.13 (1.01, 1.26)*	1.09 (0.97, 1.23)	Pooled odds ratios not calculated due to interaction. See Table 8	Pooled odds ratios not calculated due to interaction. See Table 8	1.06
3	1.30 (1.17, 1.45)***	1.26 (1.14, 1.40)***	1.24 (1.11, 1.38)***	1.19 (1.06, 1.33)**			2.58
4	1.65 (1.49, 1.81)***	1.57 (1.42, 1.73)***	1.52 (1.37, 1.68)***	1.41 (1.27, 1.57)***			6.84
5 (most deprived)	2.07 (1.88, 2.27)***	1.95 (1.77, 2.14)***	1.89 (1.71, 2.07)***	1.57 (1.41, 1.75)***			13.49
							23.97
NS-SEC							
Higher and professional	1.00	1.00	1.00	1.00			Model 3
Intermediate	1.22 (0.93, 1.61)	1.20 (0.91, 1.58)	1.18 (0.90, 1.56)	1.16 (0.86, 1.55)	Pooled odds ratios not calculated due to interaction with birthweight	Pooled odds ratios not calculated due to interaction with gestation	2.44
Routine and manual	1.58 (1.27, 1.97)***	1.53 (1.22, 1.92)***	1.50 (1.19, 1.89)*	1.34 (1.05, 1.72)*			11.13
Other (unemployed/ students/ns)	2.28 (1.64, 3.17)***	2.13 (1.51, 2.99)***	2.13 (1.51, 3.00)***	1.71 (1.18. 2.47)**			4.29
							17.87
Potential confounding factors							
Registration type/Marital status							
Married	1.00	1.00	1.00	1.00	1.00	1.00	Model 3 Model 4 Model 5
Sole registration[4]	1.66 (1.51, 1.82)***	1.48 (1.35, 1.64)***	1.36 (1.23, 1.5)***	1.52 (1.37, 1.69)***	1.11 (1.00, 1.24)	1.20 (1.07, 1.33)**	3.40 0.98 1.65
Joint registration/ same address[5]	1.21 (1.28, 1.29)***	1.13 (1.06, 1.21)***	1.12 (1.05, 1.20)***	1.31 (1.21, 1.40)***	1.13 (1.04, 1.21)**	1.18 (1.10, 1.27)***	6.83 3.32 4.40
Joint registration/ different address[5]	1.57 (1.45, 1.71)***	1.40 (1.28, 1.53)***	1.30 (1.18, 1.42)***	1.48 (1.23, 1.64)***	1.14 (1.03, 1.26)*	1.21 (1.09, 1.34)***	3.93 1.49 2.11
							14.16 5.79 8.16
Maternal age (years)							Model 3 Model 4 Model 5
<20	1.43 (1.30, 1.58)***	1.43 (1.30, 1.58)***	1.19 (1.07, 1.32)**	1.23 (1.10, 1.38)***	1.19 (1.06, 1.33)**	1.22 (1.09, 1.37)**	1.86 1.58 1.79
20–24	1.19 (1.10, 1.28)***	1.19 (1.10, 1.28)***	1.07 (0.99, 1.15)	1.08 (1.00, 1.17)	1.07 (0.98, 1.17)	1.11 (1.02, 1.20)*	1.68 1.48 2.25
25–29	1.00	1.00	1.00	1.00	1.00	1.00	– – –
30–34	0.81 (0.75, 0.88)***	0.81 (0.75, 0.88)***	0.89 (0.82, 0.96)**	0.93 (0.86, 1.01)	0.95 (0.87, 1.03)	0.91 (0.84, 0.99)*	–1.74 –1.22 –2.29
35–39	0.92 (0.84, 1.00)	0.92 (0.84, 1.00)	1.02 (0.94, 1.11)	1.10 (1.00, 1.21)*	1.16 (0.99, 1.36)	1.13 (0.97, 1.33)	1.34 2.04 1.70
40 and over	1.15 (1.00, 1.33)	1.15 (1.00, 1.33)	1.23 (1.07, 1.43)**	1.32 (1.14, 1.54)***	1.11 (0.94, 1.31)	1.12 (0.94, 1.33)	0.95 0.39 0.42
							4.09 4.28 3.87
Maternal country of birth							
UK	1.00	1.00	1.00	Unable to calculate due to high correlation between country of birth & ethnicity	Unable to calculate due to high correlation between country of birth & ethnicity	Unable to calculate due to high correlation between country of birth & ethnicity	Model 2
Non-UK	1.20 (1.13, 1.28)***	1.24 (1.68, 1.32)***	1.16 (1.08. 1.23)***				3.40
Sex of baby							
Female	1.00	1.00	1.00	1.00	1.00	1.00	Model 3 Model 4 Model 5
Male	1.22 (1.16, 1.28)***	1.22 (1.16, 1.28)***	1.22 (1.16, 1.30)***	1.22 (1.15,1.28)***	1.32 (1.25,1.41)***	1.14 (1.08,1.20)***	10.11 13.48 5.97
Ethnicity of baby							
White	1.00	1.00	1.00		1.00	1.00	Model 2 Model 4 Model 5
Asian (Bangladeshi/ Pakistani/ Indian)	1.79 (1.65, 1.95)***	1.81 (1.67, 1,97)***	1.87 (1.69, 2.05)***	Equivalent to Model 2	1.24 (1.12, 1.37)***	1.71 (1.55, 1.89)***	6.24 2.60 5.57
Black African/ Black Caribbean	1.81 (1.62, 2.01)***	1.82 (1.64, 2.03)***	1.54 (1.38, 1.73)***		1.31 (1.17, 1.48)***	1.44 (1.29, 1.62)***	2.64 1.78 2.30
Other	1.31 (1.19, 1.43)***	1.31 (1.18, 1.43)***	1.23 (1.12, 1.35)***		1.10 (0.99, 1.21)	1.44 (1.09, 1.32)***	1.93 0.94 3.15
							10.80 5.31 11.01
Factors on causal pathway							
Birthweight (grams)							Model 1
<1,500	144.84 (136.14, 154.09)***	143.70 (135.05, 152.90)***					45.43
1,500–2,499	7.43 (6.85, 8.05)***	7.38 (6.80, 8.00)***	Interaction between birthweight and deprivation. See Table 7	Interaction between birthweight and deprivation. See Table 7	Interaction between birthweight and deprivation. See Table 7	Interaction between birthweight and deprivation. See Table 7	13.47
2,500–4,499	1.00	1.00					–
4,500 and over	0.76 (0.53, 1.10)	0.75 (0.52, 1.08)					–0.18
							58.72
Gestation (weeks)							Model 1
21–27	401.03 (373.53, 430.55)***	396.52 (369.27, 425.79)***					38.44
28–31	30.32 (27.36, 33.60)***	29.74 (26.83, 32.96)***	Interaction between gestation and deprivation. See Table 7	Interaction between gestation and deprivation. See Table 7	Interaction between gestation and deprivation. See Table 7	Interaction between gestation and deprivation. See Table 7	8.32
32–36	5.98 (5.49, 6.52)***	5.90 (5.41, 6.43)***					10.68
37–41	1.00	1.00					–
42 and over	0.95 (0.78, 1.16)	0.95 (0.77, 1.16)					–0.10
							57.35
Small for gestational age							Model 1
SGA (<5%)	3.95 (3.49, 4.48)***	3.79 (3.34, 4.29)***	Interaction between SGA and deprivation. See Table 7	Interaction between SGA and deprivation. See Table 7	Interaction between SGA and deprivation. See Table 7	Interaction between SGA and deprivation. See Table 7	11.18
Not SGA (≥5%)	1.00	1.00					–

* p <0.05 ** p <0.005 *** p <0.001

1 Adjusted for covariate only where it is not the main explanatory variable in model.
2 Carstairs deprivation not adjusted for where NS-SEC is main explanatory variable.
3 Proportion of all deaths in population which potentially would be avoided if risk was same as that in baseline group.
4 Birth takes place outside marriage, only mother registers the birth.
5 Birth takes place outside marriage, both mother and father register the birth.

Table 7

Adjusted odds ratios for the effect of deprivation on neonatal, postneonatal and infant mortality, stratified by birthweight, gestation and small for gestational age status, 2005–06.

Population excess deaths (number and proportion) attributed to deprivation also presented.

England and Wales

	Carstairs deprivation index					Total excess deaths n[3] & %[4]	p value[2]
	Quintile 1	Quintile 2	Quintile 3	Quintile 4	Quintile 5		
	OR (95% CI)[1]	OR (95% CI)[1]	OR (95% CI)[1]	OR (95% CI)[1]	OR (95% CI)[1]		
Neonatal mortality							
Birthweight							
Low birthweight (<2,500 grams)	1.00	1.08 (0.90, 1.29)	1.13 (0.96, 1.35)	1.12 (0.95, 1.31)	1.14 (0.97, 1.34)		
Number excess deaths per year[3]	–	12	25	32	58	127	0.01
% excess deaths per year[4]	–	0.96	1.96	2.48	4.56	9.96	
Not low birthweight (≥2,500 grams)	1.00	0.92 (0.72, 1.19)	0.97 (0.76, 1.23)	1.31 (1.05, 1.64)*	1.35 (1.09, 1.67)*		
Number excess deaths per year[3]	–	–6	–3	31	44	66	
% excess deaths per year[4]	–	–1.22	–0.48	5.84	8.47	12.61	
Gestation							
Preterm (<37 weeks)	1.00	1.10 (0.92, 1.32)	1.18 (1.00, 1.40)	1.22 (1.04, 1.44)*	1.35 (1.15, 1.58)***		
Number excess deaths per year[3]	–	15	33	53	126	227	0.14
% excess deaths per year[4]	–	1.15	2.59	4.13	9.74	17.60	
Term (≥37 weeks)	1.00	0.93 (0.72, 1.20)	0.98 (0.77, 1.25)	1.34 (1.07, 1.67)***	1.33 (1.07, 1.65)*		
Number excess deaths per year[3]	–	–6	–2	34	45	72	
% excess deaths per year[4]	–	–1.03	–0.31	6.34	8.39	13.38	
Small for gestational age							
Small for gestational age (<5%)	1.00	0.97 (0.67, 1.40)	1.16 (0.83, 1.62)	1.13 (0.82, 1.56)	1.28 (0.94, 1.73)		
Number excess deaths per year[3]	–	–1	5	6	23	33	0.46
% excess deaths per year[4]	–	–0.32	2.14	2.56	9.56	13.94	
Not small for gestational age (≥5%)	1.00	1.09 (0.92, 1.28)	1.17 (1.00, 1.38)*	1.44 (1.24, 1.67)***	1.43 (1.32, 1.78)***		
Number excess deaths per year[3]	–	16	34	105	148	303	
% excess deaths per year[4]	–	1.12	2.41	7.34	10.42	21.28	
Postneonatal mortality							
Birthweight							
Low birthweight (<2,500 grams)	1.00	1.13 (0.81, 1.57)	1.00 (0.73, 1.38)	1.04 (0.77, 1.40)	1.00 (0.75, 1.33)		
Number excess deaths per year[3]	–	6	–	3	–	9	<0.001
% excess deaths per year[4]	–	1.51	–	0.93	–	2.45	
Not low birthweight (≥2,500 grams)	1.00	1.12 (0.85, 1.47)	1.21 (0.93, 1.57)	1.44 (1.12, 1.84)*	1.83 (1.44, 2.32)***		
Number excess deaths per year[3]	–	7	15	36	88	145	
% excess deaths per year[4]	–	1.32	2.84	7.01	17.17	28.34	
Gestation							
Preterm (<37 weeks)	1.00	1.22 (0.88, 1.75)	1.15 (0.82, 1.61)	1.27 (0.93, 1.74)	1.23 (0.91, 1.67)		
Number excess deaths per year[3]	–	8	7	18	22	55	0.03
% excess deaths per year[4]	–	2.43	2.09	5.31	6.80	16.64	
Term (≥37 weeks)	1.00	1.08 (0.83, 1.41)	1.12 (0.87, 1.45)	1.34 (1.06, 1.71)*	1.68 (1.34, 2.12)***		
Number excess deaths per year[3]	–	5	9	31	86	131	
% excess deaths per year[4]	–	0.90	1.68	5.73	15.72	24.04	
Small for gestational age							
Small for gestational age (<5%)	1.00	1.00 (0.66, 1.52)	0.73 (0.48, 1.10)	0.95 (0.65, 1.37)	0.99 (0.69, 1.40)		
Number excess deaths per year[3]	–	–	–8	–2	–1	–10	0.02
% excess deaths per year[4]	–	–	–5.14	–1.18	–0.44	–6.76	
Not small for gestational age (≥5%)	1.00	1.18 (0.92, 1.50)	1.39 (1.03, 1.64)*	1.49 (1.19, 1.86)***	1.76 (1.42, 2.18)***		
Number excess deaths per year[3]	–	14	33	57	116	220	
% excess deaths per year[4]	–	1.98	4.55	7.80	15.89	30.23	
Infant mortality							
Birthweight							
Low birthweight (<2,500 grams)	1.00	1.09 (0.93, 1.28)	1.10 (0.94, 1.28)	1.09 (0.94, 1.25)	1.09 (0.93, 1.25)		
Number excess deaths per year[3]	–	18	25	32	50	125	<0.001
% excess deaths per year[4]	–	1.07	1.51	1.93	3.08	7.60	
Not low birthweight (≥2,500 grams)	1.00	1.01 (0.84, 1.22)	1.08 (0.91, 1.29)	1.39 (1.18, 1.63)***	1.60 (1.37, 1.88)***		
Number excess deaths per year[3]	–	1	12	69	137	220	
% excess deaths per year[4]	–	0.13	1.18	6.68	13.21	21.20	
Gestation							
Preterm (<37 weeks)	1.00	1.13 (0.96, 1.33)	1.17 (1.01, 1.36)*	1.22 (1.06, 1.42)*	1. 31 (1.14, 1.51)***		
Number excess deaths per year[3]	–	24	40	68	143	275	0.007
% excess deaths per year[4]	–	1.48	2.44	4.20	8.83	16.95	
Term (≥37 weeks)	1.00	1.00 (0.83, 1.20)	1.05 (0.88, 1.26)	1.36 (1.15, 1.60)***	1.53 (1.30, 1.78)***		
Number excess deaths per year[3]	–	–	8	68	136	212	
% excess deaths per year[4]	–	–	0.74	6.29	12.59	19.62	
Small for gestational age							
Small for gestational age (<5%)	1.00	0.98 (0.75, 1.30)	0.97 (0.75, 1.26)	1.05 (0.82, 1.34)	1.15 (0.92, 1.45)		
Number excess deaths per year[3]	–	–0.1	–2	4	22	23	0.06
% excess deaths per year[4]	–	–0.22	–0.46	1.06	5.68	6.07	
Not small for gestational age (≥5%)	1.00	1.11 (0.97, 1.28)	1.22 (1.07, 1.39)*	1.45 (1.28, 1.65)***	1.60 (1.42, 1.81)***		
Number excess deaths per year[3]	–	–28	64	160	285	480	
% excess deaths per year[4]	–	–1.32	2.97	7.42	13.26	22.33	

* p <0.05 ** p <0.005 *** p <0.001

1 Adjusted for maternal age, registration status, sex of child and ethnicity of child.

2 P value from interaction taken from likelihood ratio test.

3 Number of deaths in sub-population (eg low birthweight babies) which potentially would be avoided each year if deprivation level was 1. Adjusted for maternal age, registration status, sex of child and ethnicity of child.

4 Proportion of deaths in sub-population (eg low birthweight babies) which potentially would be avoided each year if deprivation level was 1. Adjusted for maternal age, registration status, sex of child and ethnicity of child.

Table 8

Adjusted odds ratios for the effect of low birthweight, preterm and small for gestational age on neonatal, postneonatal and infant mortality, stratified by deprivation, 2005–06.

Population excess deaths (number and proportion) attributed to low birthweight, preterm delivery and small gestation for age also presented.

England and Wales

Carstairs deprivation index	Birthweight					Gestation					Small for gestational age				
	Not low birthweight (≥2,500 grams)	Low birthweight (<2,500grams)				Term (≥37 weeks)	Preterm (<37 weeks)				Not small for gestational age (≥5%)	Small for gestational age (<5%)			
	OR 95% CI[1])	OR (95% CI)1	p value[2]	Number of excess deaths per year[3]	% excess deaths per year[4]	OR (95% CI)[1]	OR (95% CI)[1]	p value[2]	Number excess deaths per year[3]	% excess deaths per year[4]	OR (95% CI)[1]	OR (95% CI)[1]	p value[2]	Number excess deaths per year[3]	% excess deaths per year[4]
Neonatal mortality															
1 (least deprived)	1.00	39.40 (31.52, 49.24)		121	62.71	1.00	35.00 (27.93, 43.84)		124	64.09	1.00	3.25 (2.23, 4.75)		12	7.37
2	1.00	45.96 (37.13, 56.89)		161	67.68	1.00	41.67 (33.60, 51.67)		160	67.25	1.00	2.96 (2.13, 4.11)		17	7.59
3	1.00	46.39 (38.28, 56.22)	<0.01	213	71.22	1.00	42.25 (34.88, 51.18)	0.14	214	71.04	1.00	3.28 (2.52, 4.27)	0.7	26	9.40
4	1.00	33.44 (28.64, 39.04)		288	67.52	1.00	32.05 (27.50, 37.34		286	68.72	1.00	2.68 (2.16, 3.33)		33	8.40
5 (most deprived)	1.00	33.16 (29.06, 37.84)		460	71.24	1.00	35.34 (31.11, 40.16)		471	70.66	1.00	2.73 (2.33, 3.19)		66	11.03
Postneonatal mortality															
1 (least deprived)	1.00	14.49 (10.48, 20.02)		32	35.97	1.00	10.13 (7.28, 14.09)		27	30.73	1.00	5.40 (3.49, 8.36)		11	12.50
2	1.00	14.65 (11.08, 19.38)		45	40.32	1.00	11.68 (8.82, 15.47)		41	36.66	1.00	4.13 (2.80, 6.10)		13	11.27
3	1.00	12.04 (9.34, 15.50)	<0.001	50	36.28	1.00	10.39 (8.05, 13.41)	0.03	48	34.58	1.00	3.31 (2.30, 4.76)	0.11	14	10.33
4	1.00	10.48 (8.53, 12.87)		80	38.85	1.00	9.60 (7.81, 11.81)		74	35.96	1.00	3.15 (2.39, 4.17)		23	10.96
5 (most deprived)	1.00	7.91 (6.72, 9.31)		121	36.46	1.00	7.40 (6.27, 8.74)		104	31.31	1.00	2.88 (2.35, 3.53)		42	12.60
Infant mortality															
1 (least deprived)	1.00	28.73 (24.00, 34.39)		153	54.35	1.00	23.59 (19.72, 28.23)		151	53.65	1.00	3.96 (2.98, 5.27)		24	9.12
2	1.00	30.87 (26.18, 36.39)		206	58.97	1.00	26.65 (22.62, 31.41)		201	57.50	1.00	3.38 (2.62, 4.34)		29	8.88
3	1.00	29.19 (15.20, 33.80)	<0.001	264	60.12	1.00	26.18 (22.61, 30.30)	<0.01	262	58.20	1.00	3.30 (2.66, 4.08)	0.16	40	9.73
4	1.00	22.48 (19.93, 25.35)		368	58.12	1.00	21.32 (18.93, 24.01)		360	56.69	1.00	2.85 (2.40, 3.38)		56	9.30
5 (most deprived)	1.00	19.46 (17.65, 21.45)		582	59.45	1.00	20.25 (18.41, 22.27)		575	57.60	1.00	2.79 (2.46, 3.16)		108	11.60

1 Adjusted for maternal age, registration status, sex of child and ethnicity of child.

2 P value from interaction taken from likelihood ratio test.

3 Number of deaths in sub-population (for example, Carstairs deprivation level 5) which potentially could be avoided each year if all babies had risk of that in the baseline group, adjusted for maternal age, registration status, sex of child and ethnicity of child.

4 Proportion of deaths in sub-population (for example, Carstairs deprivation level 5) which potentially would be avoided each year if all babies had risk of that in the baseline group, adjusted for maternal age, registration status, sex of child and ethnicity of child.

Appendix

Table A1 Covariates by Carstairs distribution, 2005–06

England and Wales

		Carstairs quintiles										Missing	All	
		Quintile 1 (least deprived)		Quintile 2		Quintile 3		Quintile 4		Quintile 5 (most deprived)				
		Number	% non-missing	Number	% non-missing	Number	% non-missing	Number	% non-missing	Number	% non-missing	Number	Number	% non-missing
Year	2005	98,318	49.3	105,261	49.3	117,779	49.2	135,268	49.0	170,096	49.0	195	626,917	49.1
	2006	101,222	50.7	108,352	50.7	121,562	50.8	140,864	51.0	177,086	51.0	195	649,281	50.9
Registration type/Marital status	Married	144,080	72.2	136,222	63.8	133,228	55.7	132,276	47.9	176,787	50.9	278	722,871	56.6
	Sole registration	5,029	2.5	8,637	4.0	13,914	5.8	23,338	8.5	37,301	10.7	23	88,242	6.9
	Joint registration/same address	43,420	21.8	57,082	26.7	73,404	30.7	89,604	32.4	87,852	25.3	67	351,429	27.5
	Joint registration/different address	7,011	3.5	11,672	5.5	18,795	7.9	30,914	11.2	45,242	13.0	22	113,656	8.9
Maternal age (years)	<20	5,289	2.7	9,513	4.5	15,599	6.5	25,030	9.1	33,664	9.7	13	89,108	7.0
	20–24	17,870	9.0	28,116	13.2	43,220	18.1	63,765	23.1	92,294	26.6	63	245,328	19.2
	25–29	40,866	20.5	52,185	24.4	62,980	26.3	75,030	27.2	96,928	27.9	113	328,102	25.7
	30–34	75,286	37.7	72,904	34.1	71,337	29.8	68,952	25.0	75.669	21.8	101	364,249	28.5
	35–39	49,631	24.9	42,258	19.8	38,476	16.1	35,785	13.0	39,409	11.4	74	205,633	16.1
	40 and over	10,597	5.3	8,637	4.0	7,729	3.2	7,570	2.7	9,218	2.7	26	43,777	3.4
Sex of baby	Male	102,114	51.2	109,651	51.3	123,009	51.4	140,892	51.0	177,493	51.1	203	653,362	51.2
	Female	97,426	48.8	103,962	48.7	116,332	48.6	135,240	49.0	169,689	48.9	187	622,836	48.8
Ethnicity of baby	White	162,820	92.3	168,370	89.3	183,744	86.2	198,483	79.3	175,629	56.0	195	889,241	77.8
	Asian	3,584	2.0	6,185	3.3	9,600	4.5	16,482	6.6	61,046	19.5	11	96,908	8.5
	Black	1,282	0.7	2,403	1.3	4,538	2.1	11,758	4.7	34,005	10.8	13	53,999	4.7
	Other	8,626	4.9	11,621	6.2	15,204	7.1	23,486	9.4	43,164	13.8	32	102,133	8.9
	Missing	23,228	13.2	25,034	13.3	26,255	12.3	25,923	10.4	33,338	10.6	139	133,917	11.7
Baby's ethnicity and maternal county of birth	White, UK born	149,746	84.9	155,085	82.2	170,002	79.8	183,026	73.2	154,693	49.3	150	812,702	71.1
	White, non-UK born	13,071	7.4	13,280	7.0	13,740	6.4	15,453	6.2	20,928	6.7	45	76,517	6.7
	Asian, UK born	1,469	0.8	2,266	1.2	3,298	1.5	5,522	2.2	19,645	6.3	3	32,203	2.8
	Asian, non-UK born	2,115	1.2	3,919	2.1	6,302	3.0	10,960	4.4	41,396	13.2	8	64,700	5.7
	Black, UK born	324	0.2	561	0.3	1,040	0.5	2,855	1.1	7,212	2.3	–	11,992	1.0
	Black, non-UK born	958	0.5	1,842	1.0	3,498	1.6	8,903	3.6	26,790	8.5	13	42,004	3.7
	Other, UK born	4,064	2.3	5,271	2.8	6,608	3.1	10,037	4.0	16,110	5.1	3	42,093	3.7
	Other, non-UK born	4,561	2.6	6,350	3.4	8,596	4.0	13,449	5.4	27,053	8.6	28	60,037	5.3
	Missing (not stated/not linked)	23,232		25,039		26,257		25,927		33,355		140	133,950	
Birthweight (grams)	<1,500	1,297	0.7	1,641	0.8	2,067	0.9	2,814	1.0	4,282	1.2	31	12,132	1.0
	1,500–2,499	7,156	3.6	8,628	4.1	10,924	4.6	15,163	5.5	23,146	6.7	33	65,050	5.1
	2,500–4,499	186,320	93.6	198,140	93.2	220,978	92.7	252,110	91.8	311,550	90.7	317	1,169,415	92.2
	4,500 and over	4,200	2.1	4,239	2.0	4,364	1.8	4,524	1.6	4,378	1.3	4	21,709	1.7
	Missing	567		965		1,008		1,521		3,826		5	7,892	
Low birthweight	Yes	8,453	4.2	10,269	4.8	12,991	5.5	17,977	6.5	27,428	8.0	64	77,182	6.1
	No	190,520	95.8	202,379	95.2	225,342	94.5	256,634	93.5	315,928	92.0	321	1,191,124	93.9
	Missing	567		965		1,008		1,521		3,826		5	7,892	
Gestation (weeks)	21–27	491	0.2	658	0.3	816	0.3	1,161	0.4	1,791	0.5	17	4,934	0.4
	28–31	1,072	0.5	1,277	0.6	1,507	0.6	2,009	0.7	2,985	0.9	16	8,866	0.7
	32–36	8,576	4.3	9,639	4.5	11,698	4.9	14,708	5.4	19,673	5.7	36	64,330	5.1
	37–41	179,690	90.5	191,555	90.1	213,682	89.7	243,796	88.9	302,815	88.5	306	1,131,844	89.4
	42 and over	8,726	4.4	9,407	4.4	10,513	4.4	12,601	4.6	15,008	4.4	5	56,260	4.4
	Missing (inconsistent gest-bwt)	19		25		31		46		65		1	187	
	Missing (gest not stated)	804		889		885		1,507		4,339		2	8,426	
	Missing (no link to nn4b)	162		163		209		304		506		7	1,351	
	Missing	985		1,077		1,125		1,857		4,910		10	9,964	
Preterm	Yes	10,139	5.1	11,574	5.4	14,021	5.9	17,878	6.5	24,449	7.1	69	78,130	6.2
	No	188,416	94.9	200,962	94.6	224,195	94.1	256,397	93.5	317,823	92.9	311	1,188,104	93.8
	Missing	985		1,077		1,125		1,857		4,910		10	9,964	
Small for gestational age	SGA (<5%)	6,076	3.1	7,873	3.7	10,026	4.2	14,133	5.2	24,017	7.0	11	62,136	4.9
	Not SGA (≥5%)	192,446	96.9	204,623	96.3	228,135	95.8	260,070	94.8	318,115	93.0	367	1,203,756	95.1
	Missing	1,018		1,117		1,180		1,929		5,050		12	10,306	

An update to measuring chronic illness, impairmen and disability in national data sources

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This article reports progress in delivering a revision to survey questions on disability for implementation carrying out in 2010. The Office for National Statistics has relied on survey data to report and update annual estimates of disability-free life expectancy at national level. The survey question used in this calculation has remained consistent since 1972. However, changes in national legislation, a forthcoming European regulation and a number of inadequacies in the level of detail and consistency of disability data collected in household surveys (raised as part of the *Review of Equality Data*), will require its modification and extension to ensure survey data better reflect the growing data needs in the subject area of disability in the 21st Century.

The accurate and reliable measurement of disability is increasing in importance following the revision to the *Disability Discrimination Act* in 2005 and the publication of a strategy to improve the life chances of disabled people. Of particular concern is the lack of data on impairment types and how impairments interact with social barriers erected by society and its institutions, leading to, or intensifying, the level of disability experienced by people with impairment or limiting illnesses.

Background

The Office for National Statistics (ONS) led *Review of Equality Data*[1] was guided by a cross-government task force with members assembled from eight Whitehall departments and the three devolved administrations. The Review's findings were reported in October 2007. and included a detailed assessment of current data needs and a framework (Figure 1) for meeting these needs to enable statutory bodies to monitor the fairness of Britain across a number of equality strands, including disability.

The Review emphasised the inability to present a complete picture of inequality across all equality strands due to the inadequacy of available data, which was linked to a lack of strategic co-ordination between organisations involved in gathering and disseminating data. A number of recommendations were advanced to improve data co-ordination, comparability, quality, accessibility and presentation, and in addition to implementing a principled approach (Box One) to its collection and propagation.[1]

In response to these recommendations, ONS, together with the Office for Disability Issues (ODI), the Government Equalities Office (GEO), the devolved administrations and the National Statistics Harmonisation Group initiated a project aiming to deliver coherent statistics on the subject of disability through the development of harmonised questions and data collection standards in the future capture of disability data in national household surveys and administrative data sources.

Figure 1 The measurement framework proposed by the Centre for Analysis of Social Exclusion (2006) and endorsed by the *Review of Equality Data* (Cabinet Office 2007)

Capability dimensions	Characteristics						
	Gender	Ethnicity	Disability	Age	Sexual orientation	Transgender	Religion/belief
Longevity	[Information on outcomes, process and choice/control]						
Physical security							
Health							
Education							
Standard of living							
Productive and valued activities							
Individual, family and social life							
Participation, influence and voice							
Identity, expression and self-respect							
Legal security							

Source: Review of Equality Data

Box one

The principles for collection and dissemination of equality data

- Relevance
- Integrity
- Quality
- Accessibility
- Confidentiality
- Balancing the needs of users and the burden on suppliers
- Integration, accumulation and innovation
- Balancing efficiency and fairness

The disadvantages experienced by disabled people and the associated economic and social costs were highlighted in the government document 'Improving the Life Chances of Disabled People' published in 2005 by the Prime Minister's Strategy Unit.[2] This report set an ambitious vision: by 2025, disabled people in Britain should have full opportunities and choices to improve their quality of life and will be respected and included as equal members of society.

A package of measures designed to extend choice, reduce social exclusion and improve opportunities for independent living and participation in the labour market was approved by Government; the ODI was established to implement these measures and report progress annually. One of the key problems identified in this report,[2] and echoed two years later in the *Review of Equality Data*,[1] was the limitations of existing survey data to reliably measure: the number of disabled people generally; the transitions into and out of disability and within disability at key stages such as childhood to adulthood; the meaningful segregation by impairment type; and participation in mainstream activities such as education and employment. The ODI, in response to these identified data inadequacies, commissioned the Life Opportunities Survey of Great Britain (LOS)[3] to extend the evidence base and build a measurement framework encompassing indicators of progress towards equality for disabled people by 2025. Initially the survey will collect data on a baseline random sample of 50,000 people living in private households, and is expected to go live in the latter half of 2009; interim findings are expected during the summer of 2010 and final results reported in 2011.

While the data from LOS will add detail to the traditional, narrowly focused, data on disability currently available, there is recognition among national and European government bodies that existing sources have deficiencies in meeting their changing data needs and require urgent revision.

This article sets the context for:

- change to existing disability data sources
- the circumstances of current data collections and their limitations
- the stakeholder engagement process on disability definition and assessment of data needs
- a vision statement of what data will be collected by 2010
- an explanation of the composition of the revised question suite and its analysis potential, and
- our intentions for testing its fitness for use during 2009

Why measure disability

Disabled people sometimes have additional needs to enable them to participate in society as fully as they would like and to live the sort of life they desire and aspire to. Often there are actions that government and voluntary organisations can take to provide disabled people with equality of opportunity to realise their potential: for example, through housing and transport adaptations, employment schemes, income benefits, and the provision of care services. These types of interventions, in terms of quantity and form, require knowledge of the range and density of needs at national and subnational population level, and how they evolve in order to set and adapt priorities and review progress over time.

Disability is a concern for most developed jurisdictions; both the World Health Organisation and the European Union (EU) have developed structural indicators on the subject of disability for undertaking cross-national comparisons to highlight the presence of inequalities in disability between nations. The valid and reliable reporting of these indicators requires a greater commitment to harmonisation of disability data across nation states.

Nationally, the extension to the *Disability Discrimination Act* (DDA) in 2005 included the introduction of a Disability Equality Duty (DED), which requires all public bodies to promote equality of opportunity for disabled people when developing policies, introducing practices and procedures and implementing a Disability Equality Scheme (DES). The DES is a framework to assist authorities in planning, delivering, evaluating and reporting on their activities to ensure compliance with the general DED. Two fundamental measures of any scheme will be: an enumeration of the number and proportion of disabled people the public body employs; and the number of economically active disabled people who are seeking work among the population the body serves. These indicators, among others, will set a benchmark against which the effectiveness of a DES can be judged.

Impairments can also be a cause of work limitation, restricting the type and amount of work an individual can undertake, as well as participation in the labour market. Employment is a key requirement for financial independence and independent living, as well as making provision for life beyond the state pension age. Measurement of the proportion of economically active people seeking work who have an impairment or chronic illness, and the economically inactive of working age on grounds of ill-health or impairment, are important for informing the present and future provision of state benefits. There is also the need to measure the proportion of the population beyond current state pension age who are fit for work, as the Government seeks to realign the state pension age with improvements in life expectancy that have occurred, and are expected to persist over the coming decades.

The demographic structure of the UK has been undergoing prominent transition since the 1970s with marked increases in life expectancy and the size of the population over the state pension age. A key concern among policy makers is the impact an ageing population has on the number of disabled people, with three possible scenarios: the growth in life expectancy exceeds the growth in health expectancy causing a sharp increase in the number of disabled people; the growth in life expectancy is matched by the growth in health expectancy leading to equilibrium; the growth in health expectancy exceeds the growth in life expectancy causing a contraction in the number of disabled people. The routine, valid and reliable reporting of the interaction between these indicators, broken down by severity level and impairment type for national and subnational populations, is currently unavailable from existing survey data sources and plugging this gap is an urgent priority.

Definition of disability

Disability is a multi-dimensional, and often dynamic, concept which presents measurement challenges. Perceptions of disability among the general population are diverse, and within the 'disabled' population no clear consensus on what constitutes disability exists. At the root of the confusion is the controversy surrounding the source of the disability: is it simply a function of impairment or disease, or the result of physical and social barriers erected by society and their interaction with impairment, or a combination of both? In the context of survey data, the terminology used in questions, the range of detail feasible and the particular data need it seeks to serve have an important influence on the measurement of disability: most surveys of a general nature have insufficient scope to collect the breadth of data necessary to take adequate account of the dimensions of disability involved, and compromises are made on the level of detail included.

Among the general public, the word 'disability' is widely perceived as synonymous with the permanent limitations associated with physical or mental impairment or chronic illness: a perception which conforms to a medical model of disability (Box Two).[4]

Box two

Models of disability

Medical model – disabled people are defined by their impairment or health condition, which is perceived as causing dependence and a need for treatment or care. The consequence is that constraints are placed on independent living and special arrangements imposed on access to benefits, housing, education, leisure and employment.

Social model – disability is caused by society: the physical, organisational and attitudinal barriers created by society, either deliberately or accidentally, compromise the ability of a person with impairment(s) or illness(es) to live independently and have the opportunity to participate in educational, employment and leisure activities.

The medical model promotes the view of a disabled person as dependent and needing to be either cured or supported: it justifies the way in which disabled people are socially excluded on grounds that their condition requires special intervention. However, the Prime Minister's Strategy Unit in 2005[2] clarified the differences between the terms impairment and disability: impairment is defined as a loss of actual attributes of a person, whether in terms of limbs, organs or mechanisms, including psychological functioning; disability refers to the restrictions caused by society when it does not give equivalent attention and accommodation to the needs of individuals with impairments. These disadvantages experienced by an individual resulting from barriers to independent living, education, employment and other opportunities are representative of the social model of disability. A 'disabled person' under the social model[5] can be described as someone who is disadvantaged by the way the wider environment interacts with their impairment or ill-health.

Table 1 Definitions of disability in use across UK surveys

Definition of disability	Description (case definition)	Sources
Adult population with rights under the *Disability Discrimination Act* (DDA) 2005	A person who meets at least one of the following criteria: • has or has had, a physical or mental impairment that has lasted, or is expected to last, for at least 12 months, which has, or had, a substantial and long-term adverse effect on the persons ability to carry out normal day-to-day activities, **AND/OR** • has been diagnosed with HIV, multiple sclerosis or cancer, **OR** • has a condition or impairment which would have a substantial long-term adverse effect on normal day-to-day activities without taking medication	Family Resources Survey, ONS Opinions Survey
Work limiting disability (WLD) among those of working age and those of state pension age seeking work	A long-term health problem that affects the amount, or kind, of work a person can do	Labour Force Survey (LFS), derived Annual Population Survey (APS)
People of working age with a long-term disability (LTD)	This definition includes everyone with a WLD and/or a disability covered by the DDA 1995	LFS, derived APS
Disabled adult population defined by the conventional limiting long-standing illness (LLSI), disability or infirmity questions	An illness, disability or infirmity that is long-standing and has troubled someone over a period of time and limits activities in any way either strongly or not strongly	General Household Survey, Continuous Household Survey of Northern Ireland, Health Survey for England (HSE)
International Classification of Impairments, Disabilities and Handicaps (ICIDH),[7] replaced in 2001 by the International Classification of Functioning, Disability and Health[8]	An objective measure of loss of function in performing normal activities linked to a physical or mental impairment or condition	HSE Disability module 2001
EU-Statistics on Income and Living Conditions Minimum European Health Module Global Activity Limitation indicator[9]	A self-assessment of restriction in the activities people usually do that has lasted for at least six months, caused by any ongoing physical or mental health problem, illness, impairment or other disability. The time frame relates to the activity restriction	European Health Interview Survey

Sources: Bajekal, Harries, Breman and Woodfield 2004; Eurostat 2007; Disability Discrimination Act 2005

How definitions are measured and operationalised in surveys

The Department for Work and Pensions (DWP) commissioned *Review of Disability Estimates and Definitions* (2004) found that UK surveys adopted one of five definitions of disability (Table 1).[6]

These definitions remain largely unchanged, although some changes have arisen from the update to the DDA 2005. A further definition is used currently by Eurostat following harmonisation of the Minimum European Health Module (MEHM) disability question used in the Statistics on Income and Living Conditions (EU-SILC) data collections since 2004; specifically, a Global Activity Limitation Indicator (GALI) with a distinct timeframe and extent of limitation scale.

A review of survey data sources discovered a recurring pattern in the measurement of disabled people: specifically, the majority of surveys contained two core questions asking respondents whether they suffered from a long-standing illness or disability and whether their illness or disability limited their daily activities (for a list of data sources and the disability questions they hold, see Annex A). A measure of disability defined by the DDA 2005 is collected currently on the Family Resources Survey (FRS) and the ONS Opinions Survey. The Health Survey for England measured disability in accordance with the ICIDH in its disability module in 2001, while the Welsh Health Survey activity limitation question includes age-related limitations. In addition to continuous household surveys, the Census of England and Wales in 1991 and 2001 included a question capturing limiting long-term illness or disability status; the 2011 Census will also include a question on disability, although this question will have a three category response format which allows the extent of disability to be reported.

Some surveys go further than a standard question on functional health status, and elicit information on impairment types and capability deficits the disabled person experiences. This widening of the standard data pertaining to chronic illness and disability allows users of disability data to take account of the heterogeneous nature of the disabled population and plan a more responsive and diverse range of services for disabled people. However, a clear dichotomy is apparent in the collection of additional detail: some departments such as the Department for Innovation, Universities and Skills (DIUS) collect data on impairment type using a list; others such as the DWP in their FRS collect data on capabilities. The former is more medically focused while the latter focuses more on what the person with impairments is capable of undertaking, such as carrying or lifting objects.

Surveys have received criticism for predominantly defining and measuring disability according to the medical model: the general view advanced by expert researchers in the field of disability is that these questions are simply too focused on chronic illness and impairment and greater weight should be given to a wider concept of disability.[10,11,12] The merits of extending the information base to include additional detail in the form of impairment breakdowns and capability restrictions was highlighted in a recent World Bank discussion paper[13] and in a paper published by the former Disability Rights Commission. The latter paper offered guidance for acquiring evidence to inform action, suggesting the addition of a question to discern information on the respondent's impairment type (Box Three).[14]

There is currently no standardised timeframe for survey questions eliciting information on the presence of chronic illness or disability. For example, the question on long-standing illness and activity limitation, asked on ONS's General Household Survey (GHS) since 1972 (and now asked on the Integrated Household Survey (IHS) core module), does not define a precise timeframe but clarifies that the term 'long-standing' represents a 'period of time'. The Labour Force Survey (LFS), on the other hand, asks whether the survey respondent has experienced limitations in activities for more than 12 months, while the FRS uses a timeframe of at least 12 months, taking account of likely future disability, to comply with a definition of a disabled person under the *Disability Discrimination Act 2005*; and this timeframe has been adopted by the 2011 England and Wales Census for its planned question on disability. A further time variant exists within the EU-SILC MEHM to be collected in the European Health Interview Survey, which asks survey respondents whether they have been limited in activities people usually do for at least the past six months.

This terminology references the time period to past activity restriction rather than the duration of chronic illness or disability.

Box three

Disability Rights Commission guidance on disability data collection

Please state the type of impairment which applies to you. People may experience more than one type of impairment, in which case you may indicate more than one. If none of the categories apply, please mark 'Other' and specify the type of impairment.

- Physical impairment, such as difficulty using your arms or mobility issues which means using a wheelchair or crutches
- Sensory impairment, such as being blind/having a serious visual impairment or being deaf/having a serious hearing impairment
- Mental health condition, such as depression or schizophrenia
- Learning disability/difficulty (such as Down's syndrome or dyslexia) or cognitive impairment (such as autistic spectrum disorder)
- Long-standing illness or health condition such as cancer, HIV, diabetes, chronic heart disease, or epilepsy
- Other (please specify)

Cognitive testing of the MEHM questions on chronic illness and disability found considerable inconsistency surrounding the time period with which respondents were basing their answer, which ranged from at least 6 months; over a year; 2 to 3 years; 4 to 5 years; 7 to 8 years or something you have had since childhood.[15] While the MEHM GALI question refers to a past timeframe, qualitative field testing observed respondents to take the likely future duration into account. This suggests the threshold of what constitutes a long-standing limitation is specific to the individual.

A further variation is present in how the force of limitation is collected. The IHS in combination with the General Lifestyles module uses the breakdown 'strongly limited' and 'limited, but not strongly' to differentiate the extent of activity limitation. The EU-SILC Global Activity Limitation Indicator uses the categories 'severely limited' and 'limited, but not severely', while the 2011 Census of England and Wales is proposing to use the terms 'Yes, a lot' and 'Yes, a little'. The DDA has no force of limitation breakdown, but uses the term 'substantial' in the body of its question eliciting limitation of activities.

Because definitions of disability vary by survey source, there is no annual estimate of the number of disabled adults in the UK that is coherent and reliable, and from which population subsets can be derived, which meets the needs of disability organisations, policy makers, service providers and researchers. The problems associated with comparing estimates of disability prevalence using alternative definitions has been assessed in the DWP sponsored systematic review of survey sources published in 2003.[6] The aspiration to harmonise the future collection of disability data in national household surveys and administrative sources by revision of existing question formulations is partly to overcome this confusion generated by the number of alternative estimates calculated. However, this approach is not designed to preclude organisations from applying additional definitions to meet specific, less mainstream data requirements.

Approaches to the collection of survey data also differ (Annex B Table A2). The majority of surveys collect data using a household-based face-to-face interview, although some use Computer Assisted Telephone Interviewing (CATI) and others use a postal questionnaire. In those surveys containing a list of impairments or capabilities, data are collected either through open text or predefined independent category lists. The mode of questioning is linked to the classification of disability that can be operationalised; for example, the use of showcards can influence both response rates and classification of a case to a standardised classification system such as the International Classification of Functioning, Disability and Health.[8] Such variations in methodology undermine comparisons of estimates of disability derived from different data sources.

The Integrated Household Survey core module

The IHS is a new household survey data source covering the populations of England, Scotland and Wales. It aims to provide a harmonised, high quality dataset that is capable of delivering analytical outputs of core topics at national and subnational levels. The IHS is multi-modular containing a core set of questions which cover common concepts, such as sexual identity, occupation, household composition, income and ethnicity. The planned survey composition of the IHS is outlined in Box Four.

Box four

Integrated Household Survey modules

IHS core module

Labour Force Survey (derived Annual Population Survey)

General Lifestyle (formerly General Household Survey)

Opinions Survey (formerly ONS Omnibus Survey)

Expenditure and Food Survey (now called Living Costs and Food Survey)

Longitudinal Life Opportunities Survey

English Housing Survey

The IHS core module will deliver a greatly enhanced sample size compared with what is currently available, and bring advantages related to accuracy and precision through the application of an unclustered sample design. It is estimated that the IHS core module data release in 2011 will contain a sample of 345,000 individuals and the benefits of this source for reporting estimates of disability at a number of disaggregated levels cannot be over stated. For this reason, it is the preferred survey for implementing any revision to the questions on disability currently held on household surveys.

The enhanced sample of the IHS provides scope for producing reliable estimates of ill-health, disability and activity limitation at local authority level intercensally (that is, between censuses) through pooling of data. This opportunity for improving intelligence of service need at local level must be exploited, as the advantages of reliable and adequately precise within, and between, local area intercensal trends for service planning cannot be overemphasised.

Cross-government consultation

An initial cross-government consultation was carried out in response to a specific recommendation in the *Review of Equality Data* requiring partnership working between ODI, ONS, GEO and the devolved administrations.[1] The ODI hosted a workshop with government colleagues in February 2008 with three primary objectives: to agree a common approach to disability definition; to develop common methodologies for collecting data; and to formulate an approach to implementation across government surveys. A number of government departments participated at the workshop and their stated reasons for collecting data on disability were clear: to inform policy developments; to plan the provision of core disability services; and to provide a resource to enable them to respond to information requests. The range of views expressed on future data collection were collated and used to build a description of current circumstances and how the goal of disability data harmonisation can be achieved. The aim and objectives agreed for progression are shown in Box Five.

Box five

Workshop on the review of equality data

Aim

To meet the data needs of key stakeholders and deliver coherent national statistics on chronic illness, impairment and disability through the application of agreed harmonised standards for data collection in surveys and administrative sources.

Objectives

- Clarify existing and future national and European requirements from data, and reach a consensus on priorities
- Appraise the definitions of disability (current and planned), their coverage within surveys, and their capability for delivering essential and desirable breakdowns
- Develop a question suite to measure these definitions (and/or subsets), feasible for implementation within the IHS core, and identify testing needs
- Assess the capability of the developed question suite formulation to measure the needed definitions required to meet data needs through cognitive and quantitative testing
- Synchronise the results of testing and report recommendations in line with survey planning cycles, allowing recommendations to be considered, agreed and implemented

Examination of data needs

Office for National Statistics

ONS uses questions on chronic illness, disability and infirmity and associated activity limitation, currently asked on the IHS core module (previously asked on the GHS) and the Continuous Household Survey of Northern Ireland (CHS), to calculate national estimates of disability-free life expectancy (DFLE), supplemented with limiting long-term illness data in the communal establishment population of the UK from the 2001 Census. This indicator of time spent free of disability is a valued enhancement to life expectancy information, and informs policymakers of trends in morbidity rates, relevant to assess health and social care need and the provision of benefits. A trend in DFLE has now been established using revised methodology from 2001 for the UK and constituent countries, and changing the form of this question will cause a discontinuity in this series. While this is an inconvenient consequence of harmonisation, it can be mitigated by understanding and quantifying the relationship between the existing question set used in the construction of the indicator and the future harmonised question suite.

Estimates of DFLE have also been constructed for local authorities and electoral wards in England and Wales for 2001 using census data. A data need highlighted, and currently not realisable from existing historic sources, is to provide DFLE estimates for local authorities to complement the life expectancy estimates. Consequently, a question suite that delivers the prevalence of current disability in households which can be combined with the prevalence of disability within communal establishments derived from the census question is a key data need for ONS to continue the valid and reliable measurement of DFLE at a number of geographical levels.

ONS supplies data annually to Eurostat to meet Regulation (EC) No 1177/2003 concerning Community Statistics on Income and Living Conditions (EU-SILC). The sample size needed for the UK is 13,700 individuals aged 16 years and over nested within 7,500 households for cross-sectional feeds and 10,500 individuals nested within 5,750 households for longitudinal feeds. A key concern for ONS is whether SILC data needs can be derived from the revision to the disability question suite. This uncertainty will be investigated through quantitative testing.

Office for Disability Issues and the Department for Work and Pensions

All public bodies are required to meet their DED and as such have to take steps to ensure they have sufficient data to do so. Of key importance is the need for departments to be aware of the heterogeneity of disability, and therefore the importance of gathering data on type of impairment, functional limitations and social barriers, depending on the particular policy emphasis of specific departments. The capture of data that enables the relationship between type of impairment, type of functional limitation and type of social barriers is a fundamental requirement highlighted by the ODI.

There is also a need to gather information on disability among residents of communal establishments who are not covered in household surveys to provide intercensal estimates of DDA defined disability.

The DWP has a number of indicators relevant to disabled people under the Fairness and Opportunity for all Public Sector Agreements (PSA). For example, Indicator 2 of Delivery Agreement 8[16] states:

> A narrowing of the gap between the employment rates of the following disadvantaged groups and the overall rate: disabled people, lone parents, ethnic minorities, people aged 50 and over, the 15 per cent lowest qualified, those living in the most deprived local authority wards.

The density of fitness for work beyond the state pension age has also been suggested as a potential indicator to judge the merits of revision to the state pension age in line with increases in life expectancy.

Department of Health

The Department of Health has expressed interest in the provision of intercensal updates of DFLE at primary care organisation and local authority level, for breakdowns by 'Spearhead' status[17] and by socio-economic position. The enhanced sample of the IHS has potential to meet these additional needs and update them intercensally, allowing progress to be measured and relative variations between organisations, authorities and socio-economic classes to be compared.

Government Equalities Office

The GEO is responsible for the Government's overall strategy on equality across equality strands and is responsible for delivering the Equality PSA.[18] The GEO needs robust estimates of the disabled population to inform their PSA indicators which cover discrimination and unfair treatment at work, engagement in public life, provision of public transport adaptations that promote and assist usage by disabled people, and overcoming the barriers to independent living.

Devolved administrations and the Department for Communities and Local Government

The devolved administrations of Scotland, Wales and Northern Ireland requested a standard to be established for the collection of information on illness, disability and activity limitation, for application in their national surveys, to undertake reliable comparative analyses between themselves and the UK average and England.

A key issue for local government is whether to harmonise their local surveys with the measurement of disability in the 2011 Census or national household surveys. Local authorities often rely on the census to rebase their estimates of disability and update through simulation and/or local postal surveys. For local authorities to effectively adapt their services for disabled people, to better reflect the population covered under the DDA 2005, the proposed census question on disability is likely to prove deficient; for example, there is a lack of detail on impairment type. However, the introduction of the IHS with its considerably increased sample has the scope to facilitate the provision of intercensal estimates for subnational populations, including local authorities, for monitoring purposes, as well as delivering greater detail in the range of data on disability collected. Consequently, the IHS constitutes a valid alternative data source for local agencies to rebase their estimates of disability among the private household population.

European Union

The EU Task Force on Health Expectancies publishes cross-country comparisons by EU member states using data collected from the MEHM. To ensure comparisons are valid and reliable, the EU has decided to include a small set of health expectancies among its European Community Health Indicators to provide synthetic measures of disability, chronic morbidity and perceived health. Therefore the MEHM – composed of three questions covering these dimensions – has been introduced into the EU-SILC to improve the comparability of health expectancies between countries. In addition, life expectancy without long-term activity limitation, based on the MEHM GALI question, was selected in 2004 to be one of the structural indicators for assessing the EU strategic goals (Lisbon strategy) under the name of 'Healthy Life Years'.

A distinctive characteristic of the MEHM disability question is the lack of linkage between chronic morbidity and activity restriction. Consequently, the definition of disability in MEHM refers to activity restriction, and this is measured with a GALI question asked of all survey respondents, regardless of chronic illness status. The timeframe used in the GALI is at least the past six months and refers to the activity limitation not the health condition or impairment. Both these characteristics diverge from the DDA 2005 question suite, and the existing IHS questions.

Workshop on disability definitions and harmonisation

This workshop took place in June 2008 and was attended by Welsh Assembly Government, The Scottish Government, Department for Children, Schools and Families, Department for Work and Pensions, Department for Communities and Local Government, Equality and Human Rights Commission, Office for National Statistics and Office for Disability Issues.

The aim of this workshop was to progress recommendation 4.3 of the *Review of Equality Data* to develop an agreed suite of questions to be used on all surveys, thereby ensuring a consistent approach to disability data collection across government by 2010 which will reliably capture the population of disabled people in a way consistent with the review's principles, and meets inter-departmental and European data needs. Prior to the workshop an initial suite, jointly constructed by ONS and ODI and based on the identified data needs presented above, was circulated to focus discussions during the day. Attempts at reaching a consensus on precise question content proved challenging, but the guidelines in Box Six were endorsed.

Box six

Recommendations following workshop on disability definitions and data harmonisation

- Two core questions for inclusion on all surveys measuring the number of **currently** disabled people with rights under the DDA with type of impairment or health condition captured
- Another optional question, which can be included on surveys if required, will monitor disability by looking at the barriers faced by people with impairments or health conditions
- A 12 month time period should be the standard for the question suite as it links to the 2011 Census and DDA
- The extent of limitation should be captured and linked to the response categories in either MEHM or the census
- Impairment types should not be routed from the question eliciting adverse effects and limitations in activities to allow prevalence of impairments to be calculated
- The list of impairments should include a category capturing the conditions of HIV, multiple sclerosis and cancer, specifically identified in the DDA 2005
- A means to assess the mitigating effects of medication on the reporting of activity limitation should be explored in testing
- Additional people with potential rights under the DDA, such as those with past DDA disabilities, will be collected in an alternative source or module
- The reliability of proxy responses for children under 16 years and those with communication problems or learning disabilities should be tested

The revised disability question suite and rationale

The guidelines and priorities for question testing documented in Box Six were applied to question suite development, conditioned on the practicalities of implementation within the core module of the IHS. The final formulation put forwarded for testing is presented in Figure 2. The rationale for each component is shown in Box Seven.

Figure 2 Revised disability question suite for testing

Q1a. Do you have any long-standing physical or mental health condition, impairment or disability that has lasted or is expected to last 12 months or more? Please include those that are due to old age
1. Yes
2. No

Q1b. Do you have any long-standing physical or mental health condition, impairment or disability that has lasted or is expected to last 12 months or more? Please include those that are due to old age
1. Yes
2. No

IF 1:
What is the nature of your physical or mental health condition, impairment or disability?
0. Open text – code up to 6 replies

Q1c. Do you have any of the following long-standing physical or mental health conditions or impairments that have lasted or are expected to last 12 months or more? Select all that apply. Please include those that are due to old age
SHOWCARD
1. Blindness, deafness or other communication impairment
2. Mobility impairment, such as difficulty walking
3. Learning difficulty or disability, such as Down's syndrome
4. Mental health condition, such as depression
5. HIV, multiple sclerosis or cancer
6. Other long-standing health condition or disability
7. None

Q2a. Are your day-to-day activities limited because of any physical or mental health condition, impairment or disability? Please include those that are due to old age. Would you say you are:
1. Severely limited
2. Limited but not severely
3. Not limited at all

IF Q1c = 1 thru 6
Q2b. Do your physical or mental health condition(s), impairment(s) or disability(ies) mean that your day-to-day activities are limited? Please include those that are due to old age. Would you say you are:
1. Limited a lot
2. Limited a little
3. Not limited at all

IF Q2 = 1 or 2
Q3. How long have your day-to-day activities been limited?
1. Less than 6 months
2. At least 6 months but less than 12 months
3. At least 12 months

IF 1 or 2:
Do you expect your day-to-day activities to be limited for 12 months or more altogether?
1. Yes
2. No

IF 1 to Q1a or Q1b or 1 thru 6 to Q1c AND 2 or 3 to Q2:
Q4. Do you take any medication for your long-standing health condition(s) or disability(ies)?
1. Yes
2. No

IF 1:
If you did not have this medication, do you think your activities would be limited by your long-standing health condition(s) or disability(ies)?
1. Yes
2. No

If 1 would you be:
1. Severely limited (limited a lot); or
2. Limited but not severely (limited a little)

Box seven

Rationale for question formulation

- Question 1 versions establish the presence of conditions and impairments with open and prescribed breakdowns elicited in versions b and c respectively. The term disability is excluded from question 1c to assess impact on prevalence
- Question 2 aims to establish the presence of limitations in day-to-day activities the respondent experiences: the questions differ in the strength of linkage of the condition or impairment with the limitation and in routeing; version b is routed from Q1 while version a is not. This violates the EU guidelines on non-routeing in the case of Q2b, but overcomes the social model objections to directly linking the terms impairments and disability, which implies disability is simply a function of impairment
- Question 3 aims to place the limitations in daily activities into a timeframe consistent with DDA and European data needs, 12 months or more in case of the DDA and for at least the past six months in the case of EU-SILC
- Question 4 asks the respondent whether s/he is taking medication for the condition(s) or impairment(s) and – if the answer to question 2 was category 3 – whether her/his daily activities would be limited without it

This suite was supplemented with two questions (Figure 3) on the social barriers faced by people with loss of functions as a result of impairment or illness. The rationale for the social barriers questions is to collect a high-level indicator of social model disability. These questions are an attempt to recognise that there is not necessarily a direct link between impairment and disability: an implicit assumption of questions 2a and 2b above. Questions 5a and 5b provide respondents with the opportunity to identify areas of normal life where they are limited, while questions 6a and 6b attempt to provide some of the most common contextual factors which influence participation restrictions. Contextual factors include social/environmental factors such as poor services, as well as individual factors such as health conditions and it is the interaction between these factors which disable individuals.

The combined medical and social model question suite is based on the International Classification of Functioning, Disability and Health,[8] which partitions disability into a series of components:

- Body functions and structures (for example, a defect in the structure of the ear) which is measured in questions 1a, 1b and 1c capturing impairment and health conditions
- Difficulty with day-to-day activities as a result of the loss of function established in question 1 variants, broadly equivalent to question 2 variants
- Participation restrictions, such as difficulty finding employment, measured in questions 5a and 5b
- Contextual factors such as an absence of building, transport and workspaces adaptations measured in questions 6a and 6b

Figure 3 Social barriers question suite for testing

Q5a. There are many reasons why people can't take part in activities as much as they would like to. Are you limited in the following areas of life for any reason …

Individual Prompt – Code all that apply
1. Education?
2. Work?
3. Transport?
4. Personal relationships?
5. Leisure?
6. None of these

If Q5a = 1 thru 5

Q6a. SHOWCARD

Q6a What limits you in these areas?
Code all that apply
1. Financial reasons
2. Too busy/not enough time
3. A health condition, illness or impairment
4. A disability
5. Poor services
6. Lack of assistance or equipment
7. Badly designed buildings
8. Attitudes of others
9. Lack of information
10. Other reasons

Q5b. There are many reasons why people can't take part in activities as much as they would like to. Do you have any difficulty taking part in the following areas of life for any reason …

Individual Prompt – Code all that apply
1. Education?
2. Work?
3. Transport?
4. Personal relationships?
5. Leisure?
6. None of these

If Q5b = 1 thru 5

Q6b. SHOWCARD

Q6b What causes you difficulty in these areas?
Code all that apply
1. Financial reasons
2. Too busy/not enough time
3. A health condition, illness or impairment
4. A disability
5. Poor services
6. Lack of assistance or equipment
7. Badly designed buildings
8. Attitudes of others
9. Lack of information
10. Other reasons

Future plans

The changes to questions required to harmonise data across surveys present uncertainty about how they will be understood in the field and whether the wording, routeing and breadth of categorisation will validly and reliably define the target population. A project aiming to cognitively test the question suite was initiated in March 2009: the research is being conducted by the research organisation Independent Social Research and will report findings in June 2009. The research will encompass an in-depth exploration of how respondents understand and interpret the draft questions, their ability and willingness to answer them, and the adequacy of the pre-defined categories to identify the spectrum of impairments, limitations and barriers. The findings of the cognitive testing will then be presented to a range of users of disability statistics such as organisations for disabled people, government agencies and academia to gather views on the need for further adaptation of the question suite, and establish priorities for quantitative testing in the autumn. A future article will report the findings of testing and user consultation, and the plans for implementation of the question suite on the IHS in 2010.

The potential of the disability question suite for extending ONS analyses

ONS reports life expectancy at birth and at age 65 by local and unitary authorities in the UK on an annual basis.[19] These estimates of longevity are valued by local government stakeholders for service planning, and they provide national governments with evidence of the scale of geographical inequalities in mortality. However, there is uncertainty about whether health expectancies are patterned in a similar way to life expectancy. While the decennial census provides the necessary data to undertake precise and accurate measurement of health expectancy for local authorities,[20] there is only opportunity to update these figures every ten years, constraining the ability to monitor improvement and relative inequalities between areas during the intervening years: current survey data are inadequate for computing estimates of health expectancy at subnational levels. This gap in the evidence-base needed for planning and forecasting at local level was raised by the Department for Communities and Local Government during the consultation phase. Moreover, the Department of Health has expressed interest in the provision of health expectancies by Primary Care Organisations, to inform their service needs.

The greatly enhanced sample size of the IHS core module will deliver adequate data to enable the routine measurement of health expectancies by local areas in Great Britain and health areas in England to be undertaken and reported annually alongside estimates of life expectancy.

The disaggregation of DFLE by severity level is another potential metric ONS will be able to deliver following the implementation of the question suite. The needs of individuals with severe limitations in carrying out day-to-day activities are different to those who are limited but not severely. The heterogeneity of the population classified as disabled is not reflected in the DFLE metric currently reported by ONS, and delivering metrics that distinguishes these groups will add value to service planning intelligence.

The scope to build the capability dimensions of the *Review of Equality Data* endorsed measurement framework into metrics of disability will be enhanced through use of the socio-demographic variables collected on the IHS core. For example, the scope to compare the educational achievement, general health, standard of living, participation in the labour market and the socio-economic class distribution of the disabled and non-disabled population will help to ascertain the presence of inequality and to monitor progression towards equality for disabled people by 2025.

Conclusion

This article has described recent developments to revise the formulation and scope of disability data collection in the UK in response to the publication of the *Review of Equality Data* in 2007 and the expressed data needs of government departments. The revision to the disability question suite has been targeted for inclusion on the IHS core module: a new data source which benefits from a greatly enhanced sample size, capable of delivering a wider and more detailed compilation of policy relevant outputs than previously available.

Implementation of the question suite onto the IHS core module is planned for April 2010, depending on its performance during cognitive and quantitative testing. The 2010 deadline is desirable to enable a 3-year aggregated sample of approximately one million individuals, centred on the census year, to be used as an alternative source for rebasing local area estimates of the number of disabled people.

Formulation of the disability question suite has been guided by the expressed data needs of consulted government departments, taking into consideration stretched survey space allocations. The variation in timeframes, terminology and routeing, and the tensions between the relative merits of competing definitions of disability, has constrained the question suite formulation presented here. However, ONS believes this suite constitutes a balanced compromise, capable of meeting the majority of data needs expressed by government departments for the second decade of the 21st Century. ONS will report the findings of the cognitive and quantitative testing projects and recommendations for action in a follow-up article in 2010.

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Annex A

Table A1 Chronic illness, impairment and disability information collected across the UK (excluding the census)

Core question type	Data source									
	Dept. for Culture, Media and Sport	Dept. for Transport	Dept for Communities and Local Government		Dept. for Children, School and Families				Dept. for Business Enterprise and Regulatory Reform	Dept. for Works and Pensions
	Taking Part Survey	National Travel Survey	English Housing Survey	New Place Survey	Pre 16 Survey	Youth Cohort Survey	Longitudinal Study of Young People in England	Post 16 National Pupil Database and Individual Learner Record	Fair Treatment at Work	Family Resources Survey
Do you (or any member in your household) have any long-standing illness, disability or infirmity?		'any disability or other long-standing health problem'	For household					Learner considers him/ herself to have a learning difficulty and/ or disability and/or health problem		'long-standing physical or mental impairment, illness or disability'
Does this illness or disability limit your activities in any way?							Compared to people of your age			
What type/sort of illness/ impairment or disability do you have?			List of options offered					List of impairments and, separately, a list of specific learning difficulties offered		
Do you receive medication or treatment without which your health problems would substantially affect your life?										
Have you ever had a long-term illness, disability or infirmity that affected your activities?										Along with – did this substantially limit your ability to carry out out normal day-to-day activities

Core question type	Data source								
	Scottish Government			Northern Ireland			Dept. of Innovation, Universities and Skills		
	Health Survey	All Forests Visitor Monitoring Survey	Scottish House Condition Survey	Census	Continuous Household Survey	Health and Social Wellbeing Survey	Student Income and Expenditure Survey	Universities and Colleges Admissions System	Higher Education Statistics Agency
Do you (or any member in your household) have any long-standing illness, disability or infirmity?		Do you have a disability or special need?	Longer version of question used				Uses Disability Students Allowance as a proxy measure		Uses Disability Students Allowance as a proxy measure
Does this illness or disability limit your activities in any way?									
What type/sort of illness/ impairment or disability do you have?	What is the matter with you?	Options offered	Which of the conditions on the list best describe the ill health or disability?		Would you mind telling me what this illness or infirmity is?	Would you mind telling me what this illness or infirmity is?		List of impairments offered for the respondents to identify with	List of impairments offered for the respondents to identify with
Do you receive medication or treatment without which your health problems would substantially affect your life?									
Have you ever had a long-term illness, disability or infirmity that affected your activities?									

Survey question used to determine disability status

Survey uses receipt of benefits as a proxy for disability status

Table A1 continued **Chronic illness, impairment and disability information collected across the UK (excluding the census)**

Core question type	Data source								
	Welsh Assembly			Office for National Statistics				Office for National Statistics and Dept. of Health	Office for National Statistics and Dept. for Communities and Local Government
	Welsh Health Survey	Living in Wales	Future Skills Wales	Labour Force Survey	Integrated Household Survey and Expenditure and Food Survey	Opinions Survey	Household Assets Survey	General Household Survey; EU-SILC Minimum European Health Module	Survey of English Housing
Do you (or any member in your household) have any long-standing illness, disability or infirmity?				Do you have any health problems or disabilities which limits the amount or type of work you can do?					
Does this illness or disability limit your activities in any way?	Includes illnesses and disabilities and due to old age					Limit your ability to carry out out normal day-to-day activities?		Also disaggregated by limited or strongly limited	
What type/sort of illness/ impairment or disability do you have?				Which of these is your main health problem?				What is the matter with you?	
Do you receive medication or treatment without which your health problems would substantially affect your life?				Relates question to limiting activity question					
Have you ever had a long-term illness, disability or infirmity that affected your activities?			Questions are included on employment, training and disability			Along with – did this substantially limit your ability to carry out out normal day-to-day activities			

Survey question used to determine disability status

Survey uses receipt of benefits as a proxy for disability status

Annex B

Table A1 Timeframes covered by surveys

Period of time	At least 12 months	More than a year	At least 6 months
Office for National Statistics – Integrated Household Survey	Department for Work and Pensions – Family Resources Survey	Office for National Statistics – Labour Force Survey	EU-SILC proposals for the General Household Survey
Office for National Statistics – Opinions Survey	Department for Children, Schools and Families – Longitudinal Study of Young People in England	Welsh Assembly – Future Skills Wales	
Office for National Statistics – Household Assets Survey	Department for Communities and Local Government – English Housing Survey	Department for Business Enterprise and Regulatory Reform – Fair Treatment at Work	
Department for Children, Schools and Families and Department for Innovation, Universities and Skills – Youth Cohort Study	Department for Transport – National Travel Survey		
Welsh Assembly – Living in Wales	Scottish Government – Scottish Health Survey		
Department for Communities and Local Government – English House Conditions Survey			
Department for Communities and Local Government – New Place Survey			
Department for Culture, Media and Sport – Taking Part			
Scottish Government – Scottish House Condition Survey			

Table A2 Methods employed by surveys

Department	Survey	Disaggregated by impairment / capability	Open ended question or list?	Method of data collection
Culture, Media and Sport	Taking Part Survey	Yes	List – capabilities	Face-to-face
Transport	National Travel Survey	No		Face-to-face
Communities and Local Government	English Housing Survey	Yes	List – impairment	Face-to-face
	New Place Survey	Yes	List – capabilities	Postal survey
Children, Schools and Families	Youth Cohort Study	No		Face-to-face
	18–19 – Longitudinal Study of Young People in England	Yes	Open plus list – capabilities	Face-to-face
	Post 16 National Pupil Database and Individual Learner Record	Yes	List – impairment plus a specific list about learning difficulty	School census face-to-face with Special Educational Needs adviser
Welsh Assembly	Welsh Health Survey	No		Short face-to-face interview followed by a detailed self completion questionnaire
	Living in Wales	Limited information	Open	Face-to-face
	Future Skills Wales	No		Face-to-face
Work and Pensions	Family Resources Survey	Yes	List – capabilities	Face-to-face
Office for National Statistics	Integrated Household Survey; Expenditure and Food Survey; Survey of English Housing	No		Face-to-face and telephone interview
	General Household Survey and EU-SILC Minimum European Health Module	Yes	Open	Face-to-face and telephone interview
	Opinions Survey	Yes	List – capabilities and impairment	Face-to-face and telephone interview
	Household Assets Survey	Yes	List – capabilities	Face-to-face and telephone interview
	Labour Force Survey	Yes	List – impairments	Face-to-face and telephone interview

Table A2 continued **Methods employed by surveys**

Department	Survey	Disaggregated by impairment/capability	Open ended question or list?	Method of data collection
Business Enterprise and Regulatory Reform	Fair Treatment at Work	No		Face-to-face
Scottish Government	Health Survey	Yes	Open	Computer aided interview – face-to-face
	All Forests Visitor Monitoring Survey	Yes	List – impairment	Face-to-face
	Scottish House Condition Survey	Yes	List – impairment	Computer aided interview – face-to-face
Northern Ireland	Census	No		Face-to-face
	Continuous Household Survey	Yes	Open	Face-to-face
	Health and Social Wellbeing Survey	Yes	Open	Face-to-face
Innovation, Universities and Skills	Higher Education Statistics Agency	Yes	List – impairment	Application form
	Student Income and Expenditure Survey	No		Face-to-face
	Universities and Colleges Admission Service	Yes	List – impairment	Application form

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Symbols

.. not available
: not applicable
- nil or less than half the final digit shown
blank not yet available

Notes to tables

Time series
For most tables, years start at 1971 and then continue at five-year intervals until 1991. Individual years are shown thereafter. If a year is not present the data are not available.

United Kingdom
The United Kingdom comprises England, Wales, Scotland and Northern Ireland. The Channel Islands and the Isle of Man are not part of the United Kingdom.

Population
The estimated resident population of an area includes all people who usually live there, whatever their nationality. Members of HM and US Armed Forces in England and Wales are included on residential basis wherever possible. HM Forces stationed outside England and Wales are not included. Students are taken to be resident at their term time addresses.

Further information on population estimates is available on the National Statistics website at: www.statistics.gov.uk/popest

Live births
For England and Wales, figures relate to the number of births occurring in a period; for Scotland and Northern Ireland, figures relate to births registered in a period. By law, births must be registered within 42 days in England and Wales, within 21 days in Scotland, and within 42 days in Northern Ireland. In England and Wales, where a birth is registered later than the legal time period, and too late to be included in the count for the year of occurrence, it will be included in the count for the following year.

Perinatal mortality
In October 1992 the legal definition of a stillbirth was changed, from a baby born dead after 28 completed weeks of gestation or more, to one born dead after 24 completed weeks of gestation or more.

Period expectation of life
The life tables on which these expectations are based use death rates for the given period to describe mortality levels for each year. Each individual year shown is based on a three-year period, so that for instance 1986 represents 1985–87. More information is available on the National Statistics website at: www.statistics.gov.uk/statbase/Product.asp?vlnk=14459

Deaths
Figures for England and Wales relate to the number of deaths registered in each year up until 1992, and the number of deaths occuring in a year between 1993 and 2005. From 2006 onwards, all figures relate to the number of deaths registered in the year. All figures for Scotland and Northern Ireland relate to the number of deaths registered in each year.

Coding cause of death
Between 1 January 1984 and 31 December 1992, ONS applied its own interpretation of the International Classification of Diseases (ICD) Section Rule 3 in the coding of deaths where terminal events and other 'modes of dying' such as cardiac arrest, cardiac failure, certain thrombembolic disorders, and unspecified pneumonia and bronchopneumonia, were stated by the certifier to be the underlying cause of death and other major pathology appeared on the certificate. In these cases ONS Rule 3 allowed the terminal event to be considered a direct sequel to the major pathology and that primary condition was selected as the underlying cause of death. Prior to 1984 and between 1 January 1993 and 31 December 2000, such certificates were coded to the terminal event. National Statistics also introduced automated coding of cause of death in 1993, which may also affect comparisons of deaths by cause from 1993. Further details can be found in the annual volumes *Mortality statistics: Cause 1984*, Series DH2 no. 11, and *Mortality statistics: Cause 1993 (revised) and 1994*, Series DH2 no. 21.

From 1 January 2001, under ICD–10, Rule 3 has again been changed – for details see the article in *Health Statistics Quarterly*13. This has resulted in a fall in the death rates from respiratory diseases, notably pneumonia, and consequently slight rises in the rates for other causes for example strokes. For details of the major changes between ICD–9 and ICD–10, see the articles in *Health Statistics Quarterly* 08, 13 and 14.

Age-standardised mortality rates
Directly age-standardised rates make allowances for changes in the age structure of the population. The age-standardised rate for a particular condition is that which would have occurred if the observed age-specific rates for the condition had applied in a given standard population. Tables 2.2 and 6.3 use the European Standard Population. This is a hypothetical population standard which is the same for both males and females allowing standardised rates to be compared for each sex, and between males and females.

Abortions
Figures relate to numbers occurring in a period.

Calculating quarterly rates
Quarterly rates are calculated using seasonal adjustments which take into account the number of days in the month/year. The denominators used for calculating quarterly rates have been produced from mid-year population estimates and projections.

Marriages and divorces
Marriages are tabulated according to date of solemnisation. Divorces are tabulated according to date of decree absolute. In Scotland a small number of late divorces from previous years are added to the current year. The term 'divorces' includes decrees of nullity. The fact that a marriage or divorce has taken place in England, Wales, Scotland or Northern Ireland does not necessarily mean that either of the parties is resident there.

Civil Partnerships
The Civil Partnership Act 2004 came into force on 5 December 2005 in the UK, the first day couples could give notice of their intention to form a civil partnership. The first day that couples could normally form a partnership was 19 December 2005 in Northern Ireland, 20 December 2005 in Scotland and 21 December 2005 in England and Wales.

Civil partnerships are tabulated according to date of formation and area of occurrence. The fact that a civil partnership has taken place in England, Wales, Scotland or Northern Ireland does not necessarily mean either of the parties is resident there.

Sources
Figures for Scotland and Northern Ireland have been provided by the General Register Office for Scotland and the Northern Ireland Statistics and Research Agency respectively.

Rounding
All figures are rounded independently; constituent parts may not add to totals. Generally numbers and rates per 1,000 population are rounded to one decimal place (for example 123.4); where appropriate, for small figures (below 10.0), two decimal places are given (for example 7.62). Figures which are provisional or estimated are given in less detail (for example 123 or 7.6 respectively) if their reliability does not justify giving the standard amount of detail. Where figures need to be treated with particular caution, an explanation is given as a footnote.

Latest figures
Figures for the latest quarters and years may be provisional and will be updated in future issues when later information becomes available. Where figures are not yet available, cells are left blank.

Table 1.1 Population and vital rates: international

Selected countries

Numbers (thousands)/Rates per thousand

Year	United Kingdom	Austria	Belgium	Bulgaria	Cyprus[1]	Czech Republic	Denmark	Estonia	Finland	France	Germany[2]	Greece[3]	Hungary
Population (thousands)													
1971	55,928	7,501	9,673	8,540	610	9,810	4,963	1,369	4,612	51,251	78,313	8,831	10,370
1976	56,216	7,566	9,818	8,760	498	10,094	5,073	1,435	4,726	52,909	78,337	9,167	10,590
1981	56,357	7,569	9,859	8,891	515	10,293	5,121	1,482	4,800	54,182	78,408	9,729	10,712
1986	56,684	7,588	9,862	8,958	545	10,340	5,120	1,534	4,918	55,547	77,720	9,967	10,631
1991	57,439	7,813	9,979	8,982	587	10,309	5,154	1,566	5,014	57,055	79,984	10,247	10,346
1996	58,164	7,959	10,137	8,363	661[12]	10,315	5,262	1,416	5,125	58,026	81,896	10,709	10,193
2001	59,113	8,021	10,263	8,149	698[12]	10,267	5,349	1,367	5,181	60,964	82,260	10,931	10,200
2002	59,323	8,065	10,310	7,891	706[12]	10,206	5,368	1,361	5,195	61,399	82,440	10,969	10,175
2003	59,557	8,102	10,356	7,846	715[12]	10,203	5,384	1,356	5,206	61,832	82,537	11,006	10,142
2004	59,846	8,140	10,396	7,801	730[12]	10,211	5,398	1,351	5,212	62,252	82,532	11,041	10,117
2005	60,238	8,207	10,446	7,761	749[12]	10,221	5,411	1,348	5,237	62,638	82,501	11,083	10,098
2006	60,587	8,266	10,511	7,719	766[12]	10,251	5,427	1,345	5,256	62,999	82,438	11,125	10,077
2007	60,975	8,299	10,585	7,679	779[12]	10,287	5,447	1,342	5,277	63,392	82,315	11,171	10,066
2008	..	8,332	10,667	7,640	789[12]	10,381	5,476	1,341	5,300	63,753	82,218	11,214	10,045
2009	..	8,357[s]	10,741[s]	7,602[s]	802[12, s]	10,475[s]	5,519[s]	1,340[s]	5,325[s]	64,105[s]	82,062[s]	11,263[s]	..
Population changes (per 1,000 per annum)													
1971–76	1.0	1.7	3.0	5.2	–36.7	5.8	4.4	9.6	4.9	6.5	0.1	7.6	4.2
1976–81	0.5	0.1	0.8	3.0	6.8	3.9	1.9	6.6	3.1	4.8	0.2	12.3	2.3
1981–86	1.2	0.5	0.1	1.5	11.7	0.9	0.0	7.0	4.9	5.0	–1.8	4.9	–1.5
1986–91	2.7	5.9	2.4	0.5	15.4	–0.6	1.3	4.2	3.9	5.4	5.8	5.6	–5.4
1991–96	2.5	3.7	3.6	–13.8	25.2	0.1	4.2	–12.4	3.8	3.4	4.8	9.0	–3.0
1996–01	3.3	2.1	2.6	–10.8	12.1	–1.8	3.7	–7.3	2.5	4.5	1.1	4.5	–0.1
2001–02	3.5	5.5	4.6	–31.7	11.5	–5.9	3.6	–4.4	2.7	7.1	2.2	3.5	–2.5
2002–03	3.9	4.6	4.5	–5.7	12.7	–0.3	3.0	–3.7	2.1	7.1	1.2	3.4	–3.2
2003–04	4.8	4.7	3.9	–5.7	21.0	0.8	2.6	–3.7	1.2	6.8	–0.1	3.2	–2.5
2004–05	6.6	8.2	4.8	–5.1	26.0	1.0	2.4	–2.2	4.8	6.2	–0.4	3.8	–1.9
2005–06	5.8	7.2	6.2	–5.4	22.7	2.9	3.0	–2.2	3.6	5.8	–0.8	3.8	–2.1
2006–07	6.4	4.0	7.0	–5.2	17.0	3.5	3.7	–2.2	4.0	6.2	–1.5	4.1	–1.1
2007–08	..	4.0	7.7	–5.1	12.8	9.1	5.3	–0.7	4.4	5.7	–1.2	3.8	–2.1
2008–09	..	3.0[s]	6.9[s]	–5.0[s]	16.5[s]	9.1[s]	7.9[s]	–0.7[s]	4.7[s]	5.5[s]	–1.9[s]	4.4[s]	..
Live birth rate (per 1,000 population per annum)													
1971–75	14.1	13.3	13.4	13.2	17.7	17.8	14.6	15.4	13.1	16.0	10.5	15.8	16.1
1976–80	12.5	11.5	12.5	15.1	19.0	17.1	12.0	15.0	13.6	14.1	10.5	15.6	15.8
1981–85	12.9	12.0	12.0	13.7	20.2	13.5	10.2	15.6	13.4	14.2	10.7	13.3	12.3
1986–90	13.7	11.6	12.1	12.7	18.8	12.7	11.5	15.5	12.7	13.8	9.8	10.6	11.8
1991–95	13.2	11.8	12.0	9.8	16.9	11.1	13.1	10.7	12.9	12.7	10.9	9.9	11.7
1996–00	12.0	10.2	11.2	8.3	13.2	8.8	12.6	8.9	11.3	12.7	9.6	10.2	9.8
2001	11.3	9.4	11.1	8.5	11.6	8.9	12.2	9.3	10.8	13.1	8.9	9.3	9.5
2002	11.3	9.7	10.8	8.5	11.1	9.6	11.9	9.6	10.7	12.8	8.7	9.4	9.5
2003	11.7	9.5	10.8	8.6	11.2	9.2	12.0	9.6	10.9	12.8	8.6	9.5	9.3
2004	12.0	9.7	11.1	9.0	11.2	9.6	12.0	10.4	11.0	12.8	8.6	9.6	9.4
2005	12.0	9.5	11.3	9.2	10.9	10.0	11.9	10.7	11.0	12.9	8.3	9.7	9.7
2006	12.4	9.4	11.5	9.6	11.3	10.3	12.0	11.1	11.2	13.1	8.2	10.0	9.9
2007	12.7	9.2	11.4	9.8	10.9	11.1	11.7	11.8	11.1	12.9	8.3	9.8	9.7
2008	..	9.2[s]	11.5[s]	9.4[s]	10.4[s]	11.3[s]	11.8[s]	12.2[s]	11.2[s]	12.9[s]	8.3[s]	9.8[s]	9.9[s]
Death rate (per 1,000 population per annum)													
1971–75	11.8	12.6	12.1	9.8	9.9	12.4	10.1	11.1	9.5	10.7	12.3	8.6	11.9
1976–80	11.9	12.3	11.6	12.9	10.4	12.5	10.5	12.1	9.3	10.2	12.2	8.8	12.9
1981–85	11.7	12.0	11.4	11.3	10.0	12.8	11.1	12.3	9.3	10.1	12.0	9.0	13.7
1986–90	11.4	11.1	10.8	11.9	10.2	12.4	11.5	11.9	9.8	9.5	11.6	9.3	13.5
1991–95	11.1	10.4	10.4	12.9	9.0	11.6	11.9	13.9	9.8	9.1	10.8	9.5	14.3
1996–00	10.6	9.7	10.3	14.0	7.7	10.8	11.2	13.1	9.6	9.2	10.4	9.7	13.9
2001	10.2	9.3	10.1	14.2	6.9	10.5	10.9	13.6	9.4	8.9	10.1	9.4	13.0
2002	10.2	9.4	10.2	14.3	7.3	10.6	10.9	13.5	9.5	9.2	10.2	9.5	13.1
2003	10.3	9.5	10.4	14.3	7.2	10.9	10.7	13.4	9.4	9.2	10.3	9.6	13.4
2004	9.7	9.1	9.8	14.2	7.1	10.5	10.3	13.2	9.1	8.4	10.0	9.5	13.1
2005	9.7	9.1	9.8	14.6	7.2	10.6	10.2	12.9	9.1	8.6	10.1	9.5	13.5
2006	9.4	8.9	..	14.8	6.7	10.2	10.2	12.9	9.1	..	9.9	9.5	13.1
2007	9.4	8.9	..	..	..	..	10.2	..	9.2	..	10.0	..	13.0
2008	..	8.8[s]	9.5[s]	14.2[s]	6.6[s]	10.1[s]	9.9[s]	12.8[s]	9.2[s]	8.4[s]	10.3[s]	9.3[s]	13.0[s]

Note:
Estimated population, live birth and death rates up to the latest available data, as given in the *United Nations Monthly Bulletin of Statistics* (March 2009), *the United Nations Demographic Yearbook* (May 2008), and the Eurostat website (March 2009).

1 Republic of Cyprus - Greek Cypriot controlled area only
2 Including former GDR throughout.
3 Greece - mid-year population excludes armed forces stationed outside the country but includes alien forces stationed in the area.
4 Malta - including work and resident permit holders and foreigners residing in Malta.
5 Poland - excluding civilian aliens within the country but including civilian nationals temporarily outside the country. Average year data for 2000 and 2001 contain revised data according to the final results of the population census 2002.
6 Portugal - including the Azores and Madeira islands.
7 Spain - including the Balearic and Canary Islands.
8 For 1971 the European Union consisted of the 6 original member countries. This has since been expanded to include: 9 countries (1976–EU15); 10 countries (2004–EU25); 2 countries (2007–EU27). In this table, all totals include the EU27.
9 Including the Indian held part of Jammu and Kashmir, the final status of which has not yet been determined.
10 Japan - excluding diplomatic personnel outside the country and foreign military and civilian personnel and their dependants stationed in the area. Rates are based on births to or deaths of Japanese nationals only.
11 USA - excluding armed forces overseas and civilian citizens absent from the country for extended periods.
12 Indicates population estimates of uncertain reliability.
13 Data refer to 15 April.
14 Figures were updated taking into account the results of the 2002 All Russian Population Census.
15 Mid-year estimates have been adjusted for under-enumeration.
16 For statistical purposes the data for China do not include those for the Hong Kong SAR, Macao SAR and Taiwan province of China. Data for the period 1996 to 2000 have been adjusted on the basis of the Population Census of 2000. Data from 2001 to 2004 have been estimated on the basis of the annual national sample surveys of Population Changes. Estimate of uncertain reliability. Death rates for 1999–2003 and birth rates for 2000–2003 were obtained by the Sample Survey of Population Change 2003 in China.
17 Rate is for 1990–1995.
s Eurostat estimate

Table 1.1 continued **Population and vital rates: international**

Selected countries

Numbers (thousands)/Rates per thousand

Year	Irish Republic	Italy	Latvia	Lithuania	Luxem-bourg	Malta[4]	Nether-lands	Poland[5]	Portugal[6]	Romania	Slovakia	Slovenia	Spain[7]	Sweden
Population (thousands)														
1971	2,992	54,073	2,366	3,160	342	330	13,194	32,800	8,644	20,470	4,540	1,732	34,216	8,098
1976	3,238	55,718	2,465	3,315	361	330	13,774	34,360	9,356	21,450	4,764	1,809	36,118	8,222
1981	3,443	56,502	2,515	3,422	365	322	14,247	35,902	9,851	22,353	4,996	1,910	37,741	8,320
1986	3,543	56,596	2,588	3,560	368	344	14,572	37,456	10,011	22,823	5,179	1,975	38,536	8,370
1991	3,526	56,751	2,662	3,742	387	358	15,070	38,245	9,871	23,185	5,283	2,002	38,920	8,617
1996	3,626[13]	56,860	2,457	3,602	414	380	15,530	38,618	10,058	22,608	5,374	1,991	39,479	8,841
2001	3,833	56,960	2,364	3,487	439	391	15,987	38,254	10,257	22,430	5,379	1,990	40,477	8,883
2002	3,900	56,994	2,346	3,476	440	395	16,105	38,242	10,329	21,833	5,379	1,994	40,964	8,909
2003	3,964	57,321	2,331	3,463	448	397	16,193	38,219	10,407	21,773	5,379	1,995	41,664	8,941
2004	4,028	57,888	2,319	3,446	455	400	16,258	38,191	10,475	21,711	5,380	1,996	42,345	8,976
2005	4,109	58,462	2,306	3,425	461	403	16,306	38,174	10,529	21,659	5,385	1,998	43,038	9,011
2006	4,209	58,752	2,295	3,403	469	405	16,334	38,157	10,570	21,610	5,389	2,003	43,758	9,048
2007	4,313	59,131	2,281	3,385	476	408	16,358	38,125	10,599	21,565	5,394	2,010	44,475	9,113
2008	4,401	59,619	2,271	3,366	484	410	16,405	38,116	10,618	21,529	5,401	2,026	45,283	9,183
2009	4,518[s]	60,090[s]	2,261[s]	3,350[s]	492[s]	413[s]	16,481[s]	38,130[s]	10,632[s]	21,497[s]	5,411[s]	2,053[s]	45,853[s]	9,260[s]
Population changes (per 1,000 per annum)														
1971–76	16.4	6.1	8.4	9.8	10.7	0.0	8.8	9.5	16.5	9.6	9.9	8.9	11.1	3.1
1976–81	12.7	2.8	4.1	6.5	2.5	–4.8	6.9	9.0	10.6	8.4	9.7	11.2	9.0	2.4
1981–86	5.8	0.3	5.8	8.1	1.8	13.7	4.6	8.7	3.2	4.2	7.3	6.8	4.2	1.2
1986–91	–1.0	0.5	5.7	10.2	10.2	8.1	6.8	4.2	–2.8	3.2	4.0	2.7	2.0	5.9
1991–96	4.3	0.4	–12.8	–1.7	13.9	8.4	6.1	2.0	3.8	–5.0	3.4	–1.1	2.9	5.1
1996–01	11.7	0.4	–8.3	–6.7	13.5	6.8	6.6	–1.9	4.7	–1.8	0.2	0.1	6.3	1.2
2001–02	17.5	0.6	-7.6	-3.2	2.3	10.2	7.4	-0.3	7.0	-26.6	0.0	2.0	12.0	2.9
2002–03	16.4	5.7	-6.4	-3.7	18.2	5.1	5.5	-0.6	7.6	-2.7	0.0	0.5	17.1	3.6
2003–04	16.1	9.9	-5.1	-4.9	15.6	7.6	4.0	-0.7	6.5	-2.8	0.2	0.5	16.3	3.9
2004–05	20.1	9.9	-5.6	-6.1	13.2	7.5	3.0	-0.4	5.2	-2.4	0.9	1.0	16.4	3.9
2005–06	24.3	5.0	-4.8	-6.4	17.4	5.0	1.7	-0.4	3.9	-2.3	0.7	2.5	16.7	4.1
2006–07	24.7	6.5	-6.1	-5.3	14.9	7.4	1.5	-0.8	2.7	-2.1	0.9	3.5	16.4	7.2
2007-2008	20.4	8.3	-4.4	-5.6	16.8	4.9	2.9	-0.2	1.8	-1.7	1.3	8.0	18.2	7.7
2008-2009	26.6[s]	7.9[s]	-4.4[s]	-4.8[s]	16.5[s]	7.3[s]	4.6[s]	0.4[s]	1.3[s]	-1.5[s]	1.9[s]	13.3[s]	12.6[s]	8.4[s]
Live birth rate (per 1,000 population per annum)														
1971–75	22.2	16.0	14.4	16.4	11.6	17.5	14.9	17.9	20.3	19.3	19.7	16.4	19.2	13.5
1976–80	21.3	12.6	13.9	15.4	11.2	17.0	12.6	19.3	17.9	18.9	20.3	16.3	17.1	11.6
1981–85	19.2	10.6	15.2	16.0	11.6	15.3	12.2	19.0	14.5	15.6	18.0	14.2	12.8	11.3
1986–90	15.8	9.8	15.3	15.8	12.2	16.0	12.8	15.5	11.9	15.8	15.8	12.3	10.8	13.2
1991–95	14.0	9.6	10.8	13.1	13.3	14.0	12.8	12.9	11.4	11.1	13.3	10.0	9.8	13.3
1996–00	14.2	9.2	8.0	10.4	13.1	12.0	12.6	10.4	11.3	10.4	10.7	9.1	9.5	10.2
2001	15.0	9.4	8.4	9.1	12.4	10.1	12.6	9.6	11.0	10.1	9.5	8.8	10.0	10.3
2002	15.4	9.4	8.6	8.7	12.0	9.9	12.5	9.3	11.0	9.7	9.5	8.8	10.2	10.7
2003	15.4	9.4	9.0	8.9	11.7	10.2	12.3	9.2	10.8	9.8	9.6	8.7	10.5	11.1
2004	15.2	9.7	8.8	8.9	11.9	9.7	11.9	9.3	10.4	10.0	10.0	9.0	10.6	11.2
2005	14.7	9.5	9.3	9.0	11.5	9.6	11.5	9.5	10.4	10.2	10.1	9.1	10.7	11.2
2006	15.1	9.5	9.7	9.2	11.7	..	11.3	9.8	10.0	10.2	10.0	9.4	10.9	11.7
2007	16.2	9.5	10.2	9.5	11.4	9.5	11.0	10.2	9.7	10.0	10.1	9.8	11.0	11.7
2008	18.1[s]	9.6[s]	10.8[s]	10.5[s]	11.2[s]	9.2[s]	11.3[s]	10.8[s]	9.6[s]	14.4[s]	10.4[s]	10.0[s]	11.0[s]	11.9[s]
Death rate (per 1,000 population per annum)														
1971–75	11.0	9.8	11.6	9.0	12.2	9.0	8.3	8.4	11.0	9.4	9.4	10.0	8.5	10.5
1976–80	10.2	9.7	12.6	10.1	11.5	9.0	8.1	9.2	10.1	9.8	9.8	9.8	8.0	10.9
1981–85	9.4	9.5	12.8	10.6	11.2	8.2	8.3	9.6	9.6	10.3	10.1	10.3	7.7	11.0
1986–90	9.1	9.4	12.4	10.3	10.5	7.4	8.5	10.0	9.6	10.8	10.1	9.6	8.2	11.1
1991–95	8.8	9.7	14.8	12.0	9.8	7.6	8.8	10.2	10.4	11.5	9.9	9.7	8.7	10.9
1996–00	8.5	9.8	13.9	11.5	9.0	7.7	8.8	9.8	10.5	12.0	9.7	9.5	9.1	10.6
2001	7.9	9.6	14.0	11.6	8.4	7.6	8.7	9.5	10.2	11.6	9.7	9.3	8.9	10.5
2002	7.5	9.8	13.9	11.8	8.4	7.8	8.8	9.4	10.2	12.4	9.6	9.4	8.9	10.6
2003	7.2	10.2	13.9	11.9	9.0	7.7	8.7	9.6	10.4	12.3	9.7	9.7	9.2	10.4
2004	7.0	9.4	13.9	12.0	7.6	7.2	8.4	9.5	9.7	11.9	9.6	9.3	8.7	10.1
2005	6.6	9.7	14.2	12.8	8.0	7.8	8.4	9.7	10.2	12.1	9.9	9.4	8.9	10.2
2006	6.5	9.5	14.5	13.2	8.0	..	8.3	9.7	9.7	11.9	9.9	9.1	8.4	10.0
2007	..	..	14.5	13.5	..	..	..	..	..	11.7	9.9	..	..	10.0
2008	6.1[s]	9.8[s]	14.0[s]	13.2[s]	6.9[s]	7.7[s]	8.2[s]	10.0[s]	9.7[s]	11.9[s]	9.8[s]	9.1[s]	8.7[s]	9.9[s]

See notes on first page of table.

Table 1.1 continued Population and vital rates: international

Selected countries

Numbers (thousands)/Rates per thousand

Year	EU[8]	Russian Federation	Australia	Canada	New Zealand	China	India[9]	Japan[10]	USA[11]	Year
Population (thousands)										
1971	438,728	130,934	13,067	22,026	2,899	852,290[16]	551,311	105,145	207,661	1971
1976	450,468	135,027	14,033	23,517	3,163	937,170[16]	617,248	113,094	218,035	1976
1981	459,807	139,225	14,923	24,900	3,195	1,008,460[16]	675,185	117,902	229,958	1981
1986	465,336	144,154	16,018	26,204	3,317	1,086,733[16]	767,199	121,672	240,680	1986
1991	473,094	148,245	17,284	28,031	3,477	1,170,100[16]	851,897	123,964	252,639	1991
1996	478,084	148,160[14]	18,311[15]	29,611[15]	3,732	1,217,550[16]	942,157[12]	125,757	269,394	1996
2001	483,894	145,976[14]	19,413[15]	31,021[15]	3,880	1,271,850[16]	1,035,066[12]	127,130	285,108	2001
2002	484,714	145,306[14]	19,641[15]	31,373[15]	3,939	1,280,400[16]	1,050,640[12]	127,400	287,985	2002
2003	486,737	144,566[14]	19,873[15]	31,669[15]	4,009	1,288,400[16]	1,068,214[12]	127,650	290,850	2003
2004	488,895	143,821[14]	20,111[15]	31,974[15]	4,061	1,296,075[16]	1,085,600[12]	127,670	293,623	2004
2005	491,204	143,150[14]	20,409[15]	32,312[15]	4,099	1,303,720[16]	1,101,000[12]	127,773	296,410	2005
2006	493,169	142,490	20,700[15]	32,650	4,180	1,311,020	1,117,730[12]	127,760	299,400	2006
2007	495,247	142,110	21,020	32,980	4,230	..	1,134,000[12]	127,770	..	2007
2008	436,268	..	..	..	..	..	..	..	..	2008
2009	428,032[5]	..	..	..	..	..	..	..	..	2009
Population changes (per 1,000 per annum)										
1971–76	5.4	6.3	14.8	13.5	18.2	19.9	23.9	15.1	10.0	1971–76
1976–81	4.1	6.2	12.7	11.8	2.0	15.2	18.8	8.5	10.9	1976–81
1981–86	2.4	7.1	14.7	10.5	7.6	15.5	27.3	6.4	9.3	1981–86
1986–91	3.3	5.7	15.8	13.9	9.6	15.3	22.1	3.8	9.9	1986–91
1991–96	2.1	–1.7	11.9	11.3	14.7	10.3	21.1	2.9	12.1	1991–96
1996–01	1.8	–2.9	12.0	9.5	7.9	8.9	19.7	2.2	11.7	1996–01
2001-02	2.4	-4.6	11.7	11.3	15.2	6.7	15.0	2.1	10.1	2001–02
2002-03	4.1	-5.1	11.8	9.4	17.8	6.2	16.7	2.0	9.9	2002–03
2003-04	4.3	-5.2	12.0	9.6	13.0	6.0	16.3	0.2	9.5	2003–04
2004-05	4.9	-4.7	14.8	10.6	9.4	5.9	14.2	0.8	9.5	2004–05
2005-06	3.8	-4.6	14.3	10.5	19.8	5.6	15.2	-0.1	10.1	2005–06
2006-07	4.2	-2.7	15.5	10.1	12.0	..	14.6	0.1	..	2006–07
2007-2008	..	..	..	..	..	..	..	..	..	2007–08
2008-2009	..	..	..	..	..	..	..	..	..	2008–09
Live birth rate (per 1,000 population per annum)										
1971–75	..	..	18.8	15.9	20.4	27.2	35.6	18.6	15.3	1971–75
1976–80	..	..	15.7	15.5	16.8	18.6	33.4	14.9	15.2	1976–80
1981–85	..	..	15.6	15.1	15.8	19.2	..	12.6	15.7	1981–85
1986–90	..	..	15.1	14.8	17.1	..	..	10.6	16.0	1986–90
1991–95	11.4	10.2	14.7	13.6	16.9	18.5[17]	..	9.7	13.1	1991–95
1996–00	10.6	8.6	13.4	11.4	14.9	..	..	9.5	14.3	1996–00
2001	10.1	9.0	12.7	10.8	14.4	13.4[16]	25.4	9.2	14.1	2001
2002	10.3	9.6	12.8	10.5	13.7	12.9[16]	25.0	9.1	14.0	2002
2003	10.3	10.2	12.6	10.6	14.0	12.4[16]	24.8	8.8	14.1	2003
2004	10.4	10.4	12.7	10.5	14.3	12.3[16]	24.1	8.7	14.0	2004
2005	10.4	10.2	12.9	10.6	14.1	12.4[16]	23.8	8.3	14.0	2005
2006	10.6	10.4	12.9	..	14.1	..	..	8.6	..	2006
2007	10.6	10.9	13.5	..	15.2	..	..	..	..	2007
2008	10.8[5]	..	..	..	..	..	..	..	..	2008
Death rate (per 1,000 population per annum)										
1971–75	..	..	8.2	7.4	8.4	7.3	15.5	6.4	9.1	1971–75
1976–80	..	..	7.6	7.2	8.2	6.6	13.8	6.1	8.7	1976–80
1981–85	..	..	7.3	7.0	8.1	6.7	..	6.1	8.6	1981–85
1986–90	..	..	7.2	7.3	8.2	..	..	6.4	8.7	1986–90
1991–95	10.4	13.7	7.0	7.8	7.8	..	..	7.0	8.7	1991–95
1996–00	10.2	14.3	6.9	7.2	7.2	..	..	7.4	8.5	1996–00
2001	9.9	15.4	6.6	7.1	7.2	6.4[16]	8.4	7.6	8.5	2001
2002	9.9	16.1	6.8	7.1	7.1	6.4[16]	8.1	7.7	8.5	2002
2003	10.1	16.4	6.7	7.1	7.0	6.4[16]	8.0	7.9	8.4	2003
2004	9.7	16.0	6.6	7.1	7.0	6.4[16]	7.5	8.1	8.2	2004
2005	9.8	16.1	6.4	7.2	6.6	6.5[16]	7.6	8.5	8.3	2005
2006	..	15.2	6.5	..	6.7	..	..	8.5	8.1	2006
2007	..	15.0	6.6	..	6.8	..	..	8.8	..	2007
2008	9.7[5]	..	..	..	..	..	..	..	..	2008

See notes on first page of table.

Table 1.2 Population: national

Constituent countries of the United Kingdom

Numbers (thousands) and percentage age distribution

Mid-year	United Kingdom	Great Britain	England and Wales	England	Wales	Scotland	Northern Ireland
Estimates							
1971	55,928	54,388	49,152	46,412	2,740	5,236	1,540
1976	56,216	54,693	49,459	46,660	2,799	5,233	1,524
1981	56,357	54,815	49,634	46,821	2,813	5,180	1,543
1986	56,684	55,110	49,999	47,188	2,811	5,112	1,574
1991	57,439	55,831	50,748	47,875	2,873	5,083	1,607
1993	57,714	56,078	50,986	48,102	2,884	5,092	1,636
1994	57,862	56,218	51,116	48,229	2,887	5,102	1,644
1995	58,025	56,376	51,272	48,383	2,889	5,104	1,649
1996	58,164	56,503	51,410	48,519	2,891	5,092	1,662
1997	58,314	56,643	51,560	48,665	2,895	5,083	1,671
1998	58,475	56,797	51,720	48,821	2,900	5,077	1,678
1999	58,684	57,005	51,933	49,033	2,901	5,072	1,679
2000	58,886	57,203	52,140	49,233	2,907	5,063	1,683
2001	59,113	57,424	52,360	49,450	2,910	5,064	1,689
2002	59,323	57,627	52,572	49,652	2,920	5,055	1,697
2003	59,557	57,855	52,797	49,866	2,931	5,057	1,703
2004	59,846	58,136	53,057	50,111	2,946	5,078	1,710
2005	60,238	58,514	53,419	50,466	2,954	5,095	1,724
2006	60,587	58,846	53,729	50,763	2,966	5,117	1,742
2007	60,975	59,216	54,072	51,092	2,980	5,144	1,759
2007 by age group **(percentages)**							
0–4	*5.9*	*5.9*	*5.9*	*5.9*	*5.5*	*5.3*	*6.6*
5–15	*13.0*	*12.9*	*13.0*	*13.0*	*13.2*	*12.5*	*15.1*
16–44	*40.1*	*40.1*	*40.2*	*40.3*	*37.4*	*39.3*	*41.2*
45–64M/59F	*22.0*	*22.1*	*21.9*	*21.9*	*22.9*	*23.4*	*20.7*
65M/60F–74	*11.2*	*11.3*	*11.2*	*11.1*	*12.5*	*11.9*	*10.1*
75 and over	*7.7*	*7.8*	*7.8*	*7.8*	*8.5*	*7.5*	*6.3*
Projections[1]							
2006	60,587	58,846	53,729	50,763	2,966	5,117	1,742
2011	62,761	60,950	55,744	52,706	3,038	5,206	1,812
2016	64,975	63,107	57,837	54,724	3,113	5,270	1,868
2021	67,191	65,269	59,943	56,757	3,186	5,326	1,922
2026	69,260	67,294	61,931	58,682	3,248	5,363	1,966
2031	71,100	69,101	63,727	60,432	3,296	5,374	1,999
2031 by age group **(percentages)**							
0–4	*5.5*	*5.5*	*5.6*	*5.6*	*5.1*	*4.7*	*5.7*
5–15	*12.4*	*12.4*	*12.5*	*12.5*	*12.1*	*11.2*	*13.4*
16–44	*36.4*	*36.4*	*36.6*	*36.8*	*33.7*	*34.3*	*35.5*
45–64[2]	*23.4*	*23.4*	*23.3*	*23.3*	*23.5*	*24.4*	*23.9*
65–74[2]	*10.6*	*10.6*	*10.5*	*10.4*	*12.0*	*12.4*	*10.7*
75 and over	*11.6*	*11.6*	*11.5*	*11.4*	*13.7*	*12.9*	*10.9*

Note: Figures may not add exactly due to rounding.

1 National projections based on mid-2006 population estimates.

2 Between 2010 and 2020, state pension age will change from 65 years for men and 60 years for women to 65 years for both sexes. Between 2024 and 2026, state pension age will increase from 65 years to 66 years for both men and women.

Table 1.3 Population: subnational

Government Office Regions of England

Numbers (thousands) and percentage age distribution

Mid-year	North East	North West	Yorkshire and The Humber	East Midlands	West Midlands	East	London	South East	South West
Estimates									
1971	2,679	7,108	4,902	3,652	5,146	4,454	7,529	6,830	4,112
1976	2,671	7,043	4,924	3,774	5,178	4,672	7,089	7,029	4,280
1981	2,636	6,940	4,918	3,853	5,187	4,854	6,806	7,245	4,381
1986	2,594	6,833	4,884	3,908	5,180	4,999	6,774	7,468	4,548
1991	2,587	6,843	4,936	4,011	5,230	5,121	6,829	7,629	4,688
1993	2,594	6,847	4,954	4,056	5,246	5,154	6,844	7,673	4,734
1994	2,589	6,839	4,960	4,072	5,249	5,178	6,874	7,712	4,757
1995	2,583	6,828	4,961	4,092	5,257	5,206	6,913	7,763	4,782
1996	2,576	6,810	4,961	4,108	5,263	5,233	6,974	7,800	4,793
1997	2,568	6,794	4,958	4,120	5,262	5,267	7,015	7,853	4,827
1998	2,561	6,792	4,958	4,133	5,271	5,302	7,065	7,889	4,849
1999	2,550	6,773	4,956	4,152	5,272	5,339	7,154	7,955	4,881
2000	2,543	6,774	4,959	4,168	5,270	5,375	7,237	7,991	4,917
2001	2,540	6,773	4,977	4,190	5,281	5,400	7,322	8,023	4,943
2002	2,541	6,778	5,002	4,222	5,295	5,433	7,362	8,047	4,973
2003	2,541	6,800	5,028	4,254	5,312	5,475	7,364	8,087	5,005
2004	2,542	6,820	5,064	4,291	5,327	5,511	7,389	8,125	5,042
2005	2,550	6,840	5,108	4,328	5,351	5,563	7,456	8,185	5,087
2006	2,556	6,853	5,142	4,364	5,367	5,607	7,512	8,238	5,124
2007	2,564	6,864	5,177	4,400	5,382	5,661	7,557	8,309	5,178
2007 by age group **(percentages)**									
0–4	*5.5*	*5.9*	*5.8*	*5.6*	*6.1*	*5.9*	*7.0*	*5.8*	*5.2*
5–15	*12.6*	*13.2*	*13.0*	*12.9*	*13.4*	*13.2*	*12.2*	*13.2*	*12.5*
16–44	*38.9*	*39.4*	*40.3*	*39.4*	*39.1*	*38.6*	*48.3*	*38.9*	*37.1*
45–64M/59F	*23.2*	*22.3*	*22.0*	*22.7*	*22.0*	*22.4*	*18.6*	*22.5*	*22.9*
65M/60F–74	*11.9*	*11.5*	*11.3*	*11.6*	*11.6*	*11.7*	*8.1*	*11.3*	*12.6*
75 and over	*8.0*	*7.7*	*7.6*	*7.8*	*7.9*	*8.2*	*5.7*	*8.3*	*9.5*
Projections[1]									
2006	2,556	6,853	5,142	4,364	5,367	5,607	7,512	8,238	5,124
2011	2,594	7,014	5,377	4,591	5,506	5,890	7,817	8,550	5,368
2016	2,638	7,193	5,621	4,825	5,662	6,179	8,114	8,871	5,620
2021	2,685	7,377	5,866	5,060	5,824	6,471	8,390	9,202	5,882
2026	2,730	7,546	6,101	5,286	5,977	6,747	8,633	9,523	6,139
2031	2,769	7,696	6,319	5,491	6,114	6,997	8,858	9,814	6,374
2031 by age group **(percentages)**									
0–4	*5.2*	*5.5*	*5.6*	*5.3*	*5.9*	*5.5*	*6.7*	*5.5*	*5.0*
5–15	*12.1*	*12.6*	*12.5*	*12.3*	*13.2*	*12.6*	*12.6*	*12.7*	*11.8*
16–44	*35.6*	*36.3*	*37.7*	*35.6*	*35.7*	*34.9*	*43.7*	*35.1*	*33.9*
45–64[2]	*23.0*	*23.2*	*23.0*	*23.8*	*22.8*	*23.7*	*22.9*	*23.6*	*23.7*
65–74[2]	*11.7*	*10.9*	*10.2*	*11.0*	*10.5*	*10.9*	*7.4*	*10.8*	*11.8*
75 and over	*12.4*	*11.5*	*10.9*	*12.0*	*11.9*	*12.4*	*6.7*	*12.4*	*13.9*

Note: Figures may not add exactly due to rounding.

1 These projections are based on the 2006 population estimates and are consistent with the 2006-based national projections produced by the Office for National Statistics.

2 Between 2010 and 2020, state pension age will change from 65 years for men and 60 years for women to 65 years for both sexes.
Between 2024 and 2026, state pension age will increase from 65 years to 66 years for both men and women.

Table 1.4 Population: age and sex

Constituent countries of the United Kingdom

Numbers (thousands)

Mid-year	All ages	Age group														
		Under 1	1–4	5–14	15–24	25–34	35–44	45–59	60–64	65–74	75–84	85–89	90 and over	Under 16	16–64M/59F[1]	65M/60F[1] and over
United Kingdom																
Persons																
1981	56,357	730	2,726	8,147	9,019	8,010	6,774	9,540	2,935	5,195	2,677	..	..	12,543	33,780	10,035
1986	56,684	748	2,886	7,143	9,200	8,007	7,711	9,212	3,069	5,020	2,971	716	..	11,645	34,725	10,313
1991	57,439	790	3,077	7,141	8,168	8,898	7,918	9,500	2,888	5,067	3,119	626	248	11,685	35,197	10,557
1996	58,164	719	3,019	7,544	7,231	9,131	7,958	10,553	2,785	5,066	3,129	711	317	12,018	35,498	10,649
2000	58,886	682	2,869	7,652	7,139	8,646	8,678	11,011	2,900	4,940	3,249	755	364	11,959	36,138	10,788
2001	59,113	663	2,819	7,624	7,261	8,475	8,846	11,168	2,884	4,947	3,296	753	377	11,863	36,406	10,845
2002	59,323	661	2,753	7,603	7,400	8,264	9,004	11,307	2,892	4,967	3,344	738	388	11,785	36,622	10,916
2003	59,557	680	2,706	7,546	7,573	8,084	9,105	11,412	2,949	5,001	3,398	706	399	11,720	36,826	11,012
2004	59,846	705	2,686	7,475	7,739	7,954	9,185	11,507	3,027	5,028	3,431	702	409	11,645	37,083	11,117
2005	60,238	716	2,713	7,373	7,886	7,935	9,245	11,616	3,114	5,046	3,420	755	419	11,589	37,418	11,232
2006	60,587	732	2,765	7,241	8,020	7,896	9,262	11,744	3,240	5,029	3,416	820	423	11,537	37,707	11,344
2007	60,975	756	2,837	7,128	8,156	7,859	9,248	11,728	3,483	5,058	3,424	873	425	11,509	37,904	11,562
Males																
1981	27,412	374	1,400	4,184	4,596	4,035	3,409	4,711	1,376	2,264	922	..	..	6,439	17,646	3,327
1986	27,542	384	1,478	3,664	4,663	4,022	3,864	4,572	1,463	2,206	1,060	166	..	5,968	18,142	3,432
1991	27,909	403	1,572	3,655	4,146	4,432	3,949	4,732	1,390	2,272	1,146	166	46	5,976	18,303	3,630
1996	28,287	369	1,547	3,857	3,652	4,540	3,954	5,244	1,360	2,311	1,187	201	65	6,148	18,375	3,764
2000	28,690	350	1,469	3,920	3,606	4,292	4,298	5,457	1,420	2,294	1,278	225	81	6,128	18,685	3,878
2001	28,832	338	1,445	3,906	3,672	4,215	4,382	5,534	1,412	2,308	1,308	227	85	6,077	18,827	3,928
2002	28,964	338	1,408	3,897	3,758	4,114	4,462	5,594	1,414	2,325	1,338	226	89	6,037	18,949	3,978
2003	29,109	349	1,384	3,868	3,855	4,024	4,514	5,646	1,440	2,347	1,369	219	94	6,006	19,075	4,028
2004	29,278	362	1,376	3,832	3,953	3,960	4,546	5,691	1,479	2,365	1,392	223	98	5,971	19,229	4,078
2005	29,497	367	1,389	3,781	4,030	3,952	4,581	5,745	1,522	2,380	1,400	247	103	5,941	19,426	4,130
2006	29,694	374	1,416	3,709	4,108	3,940	4,586	5,804	1,584	2,379	1,413	273	106	5,912	19,611	4,171
2007	29,916	387	1,453	3,649	4,193	3,936	4,578	5,786	1,701	2,398	1,432	295	108	5,895	19,789	4,233
Females																
1981	28,946	356	1,327	3,963	4,423	3,975	3,365	4,829	1,559	2,931	1,756	..	..	6,104	16,134	6,708
1986	29,142	364	1,408	3,480	4,538	3,985	3,847	4,639	1,606	2,814	1,911	550	..	5,678	16,583	6,881
1991	29,530	387	1,505	3,487	4,021	4,466	3,968	4,769	1,498	2,795	1,972	460	202	5,709	16,894	6,927
1996	29,877	350	1,472	3,687	3,579	4,591	4,005	5,309	1,426	2,755	1,942	509	252	5,870	17,123	6,885
2000	30,196	333	1,399	3,732	3,533	4,353	4,380	5,554	1,481	2,646	1,971	530	283	5,832	17,453	6,911
2001	30,281	324	1,375	3,718	3,589	4,260	4,465	5,634	1,473	2,640	1,987	526	292	5,786	17,579	6,917
2002	30,359	323	1,346	3,706	3,642	4,150	4,542	5,713	1,478	2,642	2,006	513	299	5,748	17,673	6,938
2003	30,449	331	1,322	3,678	3,718	4,060	4,590	5,766	1,509	2,654	2,029	487	305	5,714	17,751	6,984
2004	30,568	343	1,310	3,642	3,785	3,993	4,639	5,816	1,548	2,662	2,040	479	310	5,674	17,854	7,039
2005	30,741	349	1,324	3,592	3,856	3,983	4,663	5,871	1,591	2,666	2,020	509	316	5,647	17,992	7,102
2006	30,893	357	1,349	3,532	3,912	3,956	4,675	5,940	1,656	2,650	2,002	547	317	5,625	18,096	7,172
2007	31,059	368	1,383	3,480	3,963	3,924	4,670	5,942	1,782	2,660	1,992	578	317	5,615	18,116	7,329
England and Wales																
Persons																
1981	49,634	634	2,372	7,085	7,873	7,086	5,996	8,433	2,607	4,619	2,388	383	157	10,910	29,796	8,928
1986	49,999	654	2,522	6,226	8,061	7,052	6,856	8,136	2,725	4,470	2,655	461	182	10,161	30,647	9,190
1991	50,748	698	2,713	6,248	7,165	7,862	7,022	8,407	2,553	4,506	2,790	561	223	10,247	31,100	9,400
1996	51,410	637	2,668	6,636	6,336	8,076	7,017	9,363	2,457	4,496	2,801	639	285	10,584	31,353	9,474
2000	52,140	607	2,544	6,757	6,275	7,682	7,661	9,764	2,564	4,372	2,907	680	328	10,572	31,977	9,591
2001	52,360	589	2,502	6,740	6,387	7,536	7,816	9,898	2,549	4,377	2,947	677	340	10,495	32,226	9,639
2002	52,572	589	2,445	6,728	6,518	7,357	7,964	10,018	2,555	4,394	2,989	664	351	10,437	32,435	9,700
2003	52,797	607	2,404	6,682	6,679	7,203	8,058	10,104	2,606	4,422	3,037	634	360	10,388	32,626	9,783
2004	53,057	629	2,390	6,618	6,836	7,090	8,133	10,177	2,675	4,445	3,063	632	370	10,326	32,856	9,875
2005	53,419	639	2,415	6,528	6,974	7,078	8,194	10,264	2,757	4,461	3,052	680	379	10,278	33,164	9,977
2006	53,729	653	2,462	6,412	7,095	7,040	8,213	10,369	2,874	4,444	3,045	740	382	10,235	33,417	10,077
2007	54,072	675	2,528	6,314	7,219	6,999	8,209	10,347	3,092	4,468	3,049	787	385	10,212	33,588	10,271
Males																
1981	24,160	324	1,218	3,639	4,011	3,569	3,024	4,178	1,227	2,020	825	94	32	5,601	15,589	2,970
1986	24,311	335	1,292	3,194	4,083	3,542	3,438	4,053	1,302	1,972	951	115	35	5,208	16,031	3,072
1991	24,681	356	1,385	3,198	3,638	3,920	3,504	4,199	1,234	2,027	1,029	150	42	5,240	16,193	3,248
1996	25,030	327	1,368	3,393	3,202	4,020	3,489	4,659	1,205	2,059	1,067	182	59	5,416	16,247	3,367
2000	25,438	311	1,303	3,462	3,172	3,823	3,802	4,842	1,259	2,040	1,148	204	73	5,416	16,556	3,466
2001	25,574	301	1,281	3,453	3,231	3,758	3,881	4,907	1,252	2,052	1,175	206	77	5,376	16,688	3,510
2002	25,704	301	1,249	3,448	3,311	3,672	3,957	4,958	1,253	2,067	1,202	204	81	5,346	16,804	3,554
2003	25,841	312	1,230	3,425	3,399	3,594	4,007	5,002	1,276	2,085	1,229	198	85	5,324	16,920	3,597
2004	25,995	323	1,225	3,394	3,493	3,538	4,036	5,037	1,310	2,100	1,248	202	89	5,295	17,060	3,640
2005	26,197	327	1,237	3,348	3,565	3,530	4,073	5,080	1,351	2,113	1,256	224	94	5,270	17,241	3,685
2006	26,371	334	1,261	3,284	3,636	3,517	4,080	5,130	1,407	2,111	1,267	248	96	5,245	17,405	3,722
2007	26,569	346	1,295	3,231	3,715	3,508	4,076	5,110	1,511	2,127	1,283	268	99	5,230	17,563	3,775
Females																
1981	25,474	310	1,154	3,446	3,863	3,517	2,972	4,255	1,380	2,599	1,564	289	126	5,309	14,207	5,958
1986	25,687	319	1,231	3,032	3,978	3,509	3,418	4,083	1,422	2,498	1,704	346	148	4,953	14,616	6,118
1991	26,067	342	1,328	3,050	3,527	3,943	3,517	4,208	1,319	2,479	1,761	411	181	5,007	14,908	6,152
1996	26,381	310	1,300	3,243	3,134	4,056	3,528	4,704	1,252	2,437	1,734	457	227	5,168	15,106	6,107
2000	26,702	296	1,241	3,296	3,103	3,859	3,859	4,923	1,304	2,332	1,758	476	255	5,155	15,421	6,126
2001	26,786	288	1,220	3,287	3,156	3,778	3,935	4,992	1,297	2,326	1,771	471	263	5,119	15,538	6,129
2002	26,868	287	1,195	3,280	3,207	3,685	4,007	5,060	1,302	2,328	1,787	460	270	5,091	15,631	6,146
2003	26,956	295	1,175	3,256	3,280	3,610	4,051	5,103	1,329	2,338	1,807	436	275	5,064	15,705	6,186
2004	27,062	306	1,165	3,224	3,342	3,552	4,097	5,141	1,365	2,345	1,815	430	280	5,031	15,796	6,235
2005	27,223	312	1,178	3,180	3,409	3,548	4,121	5,183	1,406	2,348	1,796	456	285	5,008	15,922	6,292
2006	27,358	319	1,201	3,127	3,458	3,523	4,134	5,239	1,466	2,333	1,778	492	286	4,990	16,012	6,355
2007	27,503	329	1,233	3,082	3,505	3,490	4,132	5,237	1,581	2,342	1,767	520	286	4,982	16,026	6,496

Note: Figures may not add exactly due to rounding.

1 Between 2010 and 2020, state pension age will change from 65 years for men and 60 years for women to 65 years for both sexes.

Tel no. for all enquiries relating to population estimates:- 01329 444661

Table 1.4 continued **Population: age and sex**

Constituent countries of the United Kingdom

Numbers (thousands)

Mid-year	All ages	Age group														
		Under 1	1–4	5–14	15–24	25–34	35–44	45–59	60–64	65–74	75–84	85–89	90 and over	Under 16	16–64M/59F[1]	65M/65F[1] and over
England																
Persons																
1981	46,821	598	2,235	6,678	7,440	6,703	5,663	7,948	2,449	4,347	2,249	362	149	10,285	28,133	8,403
1986	47,188	618	2,380	5,869	7,623	6,682	6,478	7,672	2,559	4,199	2,501	435	172	9,583	28,962	8,643
1991	47,875	660	2,560	5,885	6,772	7,460	6,633	7,920	2,399	4,222	2,626	529	210	9,658	29,390	8,827
1996	48,519	603	2,523	6,255	5,985	7,667	6,638	8,822	2,310	4,217	2,631	602	269	9,985	29,639	8,895
2000	49,233	575	2,406	6,375	5,923	7,304	7,257	9,199	2,411	4,107	2,727	641	309	9,980	30,243	9,010
2001	49,450	558	2,366	6,359	6,032	7,171	7,407	9,327	2,395	4,113	2,764	638	321	9,908	30,487	9,055
2002	49,652	559	2,313	6,348	6,153	7,003	7,550	9,439	2,399	4,129	2,803	625	331	9,855	30,686	9,111
2003	49,866	576	2,275	6,305	6,304	6,859	7,641	9,522	2,445	4,155	2,850	596	340	9,812	30,867	9,188
2004	50,111	597	2,262	6,245	6,450	6,751	7,712	9,591	2,509	4,175	2,875	593	349	9,755	31,083	9,273
2005	50,466	606	2,289	6,161	6,583	6,742	7,772	9,675	2,586	4,189	2,865	638	357	9,713	31,384	9,370
2006	50,763	620	2,335	6,051	6,696	6,708	7,793	9,777	2,697	4,171	2,860	695	360	9,674	31,627	9,462
2007	51,092	641	2,398	5,961	6,812	6,669	7,791	9,758	2,904	4,192	2,865	739	363	9,656	31,792	9,645
Males																
1981	22,795	306	1,147	3,430	3,790	3,377	2,856	3,938	1,154	1,902	777	89	30	5,280	14,717	2,798
1986	22,949	317	1,219	3,010	3,862	3,357	3,249	3,822	1,224	1,853	897	108	33	4,911	15,147	2,891
1991	23,291	336	1,307	3,011	3,439	3,721	3,311	3,957	1,159	1,900	970	141	39	4,938	15,302	3,050
1996	23,629	309	1,294	3,198	3,023	3,818	3,302	4,390	1,133	1,932	1,003	172	55	5,110	15,358	3,161
2000	24,030	294	1,232	3,266	2,995	3,638	3,604	4,562	1,184	1,917	1,078	192	69	5,113	15,661	3,256
2001	24,166	285	1,212	3,257	3,053	3,580	3,681	4,624	1,176	1,928	1,103	194	73	5,075	15,793	3,298
2002	24,290	286	1,182	3,253	3,127	3,500	3,755	4,673	1,176	1,942	1,128	193	77	5,047	15,904	3,339
2003	24,419	296	1,163	3,232	3,209	3,425	3,803	4,715	1,197	1,958	1,154	186	80	5,028	16,012	3,379
2004	24,563	306	1,159	3,202	3,297	3,371	3,831	4,748	1,228	1,972	1,172	190	84	5,001	16,143	3,419
2005	24,758	310	1,172	3,160	3,365	3,365	3,868	4,791	1,267	1,984	1,179	210	88	4,979	16,317	3,461
2006	24,926	317	1,196	3,100	3,432	3,353	3,875	4,839	1,320	1,981	1,190	233	91	4,957	16,475	3,494
2007	25,114	328	1,228	3,050	3,506	3,345	3,874	4,821	1,418	1,995	1,205	251	93	4,944	16,626	3,544
Females																
1981	24,026	292	1,088	3,248	3,650	3,327	2,807	4,009	1,295	2,445	1,472	273	119	5,004	13,416	5,605
1986	24,239	301	1,161	2,859	3,761	3,325	3,229	3,850	1,335	2,346	1,604	326	140	4,672	13,815	5,752
1991	24,584	324	1,253	2,873	3,333	3,739	3,322	3,964	1,239	2,323	1,656	388	171	4,720	14,088	5,777
1996	24,890	293	1,229	3,056	2,961	3,849	3,336	4,432	1,177	2,286	1,628	430	214	4,876	14,281	5,734
2000	25,203	281	1,174	3,109	2,928	3,667	3,653	4,637	1,227	2,190	1,649	448	240	4,867	14,582	5,755
2001	25,284	273	1,154	3,102	2,979	3,591	3,726	4,702	1,219	2,185	1,661	444	248	4,834	14,694	5,757
2002	25,362	273	1,131	3,095	3,026	3,503	3,795	4,767	1,223	2,187	1,676	433	254	4,808	14,782	5,772
2003	25,448	280	1,112	3,073	3,095	3,433	3,838	4,808	1,248	2,197	1,696	410	260	4,784	14,854	5,809
2004	25,548	291	1,103	3,043	3,153	3,380	3,881	4,843	1,280	2,203	1,703	403	264	4,753	14,940	5,854
2005	25,708	296	1,117	3,001	3,218	3,378	3,905	4,885	1,319	2,206	1,686	428	269	4,733	15,066	5,908
2006	25,837	303	1,139	2,952	3,264	3,355	3,918	4,938	1,377	2,190	1,670	461	270	4,717	15,152	5,968
2007	25,978	312	1,170	2,910	3,306	3,324	3,917	4,937	1,485	2,198	1,660	488	270	4,711	15,166	6,100
Wales																
Persons																
1981	2,813	36	136	407	434	383	333	485	158	272	139	21	8	626	1,663	525
1986	2,811	37	143	357	438	369	378	464	166	271	154	26	10	578	1,686	547
1991	2,873	38	153	363	393	402	389	486	154	284	164	32	13	589	1,711	573
1996	2,891	34	146	381	352	409	379	541	147	279	170	37	17	598	1,714	578
2000	2,907	32	138	383	352	378	403	565	152	265	180	39	19	591	1,734	581
2001	2,910	32	136	382	356	365	409	572	154	264	183	39	20	587	1,739	584
2002	2,920	30	132	380	365	354	414	578	156	265	185	39	20	582	1,749	589
2003	2,931	31	129	377	376	345	417	582	161	268	187	38	21	577	1,759	595
2004	2,946	32	127	373	385	339	421	586	166	270	188	39	21	572	1,773	602
2005	2,954	32	126	367	390	335	421	589	171	271	186	42	21	566	1,780	608
2006	2,966	33	127	361	399	332	421	592	177	273	186	45	22	561	1,790	615
2007	2,980	34	130	353	407	330	418	590	188	276	185	48	22	557	1,797	627
Males																
1981	1,365	18	70	209	221	193	168	240	73	118	48	5	2	321	871	173
1986	1,362	19	73	184	221	186	190	231	79	119	54	7	2	297	885	181
1991	1,391	20	78	186	199	199	194	242	74	128	60	8	2	302	891	198
1996	1,401	17	74	195	179	203	187	269	72	128	64	10	3	306	890	206
2000	1,408	16	71	196	177	185	198	280	75	124	71	12	4	303	895	210
2001	1,409	16	69	196	179	178	200	283	75	124	73	12	4	301	895	212
2002	1,414	16	68	195	184	172	202	285	77	125	74	12	5	299	900	215
2003	1,423	16	66	194	190	168	204	287	79	127	75	11	5	296	908	218
2004	1,432	16	65	192	196	166	205	288	82	128	76	12	5	294	917	221
2005	1,439	17	65	189	200	166	205	290	84	129	77	13	5	291	924	224
2006	1,445	17	65	185	204	164	205	291	87	130	77	15	5	288	929	227
2007	1,454	17	67	181	209	164	203	289	93	132	78	16	6	286	937	231
Females																
1981	1,448	18	66	199	213	190	165	246	85	154	91	16	6	305	791	352
1986	1,449	18	70	173	217	184	188	233	87	152	100	20	8	282	801	366
1991	1,482	19	75	177	194	203	195	244	80	156	104	24	10	288	820	375
1996	1,490	16	71	186	173	206	192	272	75	151	106	27	13	293	825	373
2000	1,499	15	67	186	175	192	206	285	77	142	109	28	15	288	840	371
2001	1,502	15	66	186	177	187	209	289	78	141	110	27	15	286	844	372
2002	1,506	15	65	185	181	182	212	293	80	140	111	27	16	283	849	374
2003	1,508	15	63	183	185	176	214	295	82	141	112	27	16	280	851	377
2004	1,514	15	62	182	189	172	216	298	84	142	112	26	16	278	856	380
2005	1,515	16	61	179	191	170	216	299	87	142	110	28	16	275	856	383
2006	1,521	16	62	176	195	168	216	301	90	143	108	30	16	273	861	387
2007	1,526	16	63	172	198	166	215	300	96	144	107	32	16	271	860	395

See notes on first page of table.

Table 1.4 continued **Population: age and sex**

Constituent countries of the United Kingdom

Numbers (thousands)

Mid-year	All ages	Age group														
		Under 1	1–4	5–14	15–24	25–34	35–44	45–59	60–64	65–74	75–84	85–89	90 and over	Under 16	16–64M/59F[1]	65M/60F[1] and over
Scotland																
Persons																
1981	5,180	69	249	780	875	724	603	880	260	460	232	35	14	1,188	3,110	882
1986	5,112	66	257	656	863	739	665	849	273	435	252	42	15	1,061	3,161	890
1991	5,083	66	258	634	746	795	696	853	265	441	259	51	19	1,021	3,151	912
1996	5,092	59	252	643	651	798	722	925	259	448	256	57	24	1,019	3,151	922
2000	5,063	53	230	636	628	717	774	962	263	445	267	59	28	985	3,141	937
2001	5,064	52	224	629	633	696	782	979	262	447	272	59	29	970	3,150	944
2002	5,055	51	217	622	639	669	788	993	262	449	276	58	30	955	3,150	950
2003	5,057	52	212	614	648	648	793	1,008	265	452	281	55	31	943	3,156	958
2004	5,078	54	210	609	653	635	796	1,025	270	455	286	54	31	935	3,175	968
2005	5,095	54	211	600	659	629	794	1,042	273	457	286	59	32	929	3,191	975
2006	5,117	55	213	588	668	627	790	1,058	280	456	287	63	32	922	3,213	983
2007	5,144	57	218	576	676	629	781	1,060	301	457	290	66	32	917	3,227	1,001
Males																
1981	2,495	35	128	400	445	364	298	424	118	194	77	8	3	610	1,603	282
1986	2,462	34	131	336	438	371	331	410	127	184	86	10	3	543	1,636	283
1991	2,445	34	132	324	377	394	345	415	124	192	91	13	3	522	1,623	299
1996	2,447	30	128	328	327	392	355	454	122	198	93	15	5	521	1,616	310
2000	2,432	28	118	326	315	347	377	474	125	199	100	17	6	505	1,606	322
2001	2,434	26	115	322	319	337	379	483	125	200	103	17	6	497	1,610	327
2002	2,432	26	111	319	324	325	382	490	125	202	106	17	7	489	1,612	331
2003	2,435	26	108	314	329	315	383	496	126	204	108	16	7	483	1,616	336
2004	2,446	28	107	312	332	310	384	503	129	207	111	16	7	479	1,627	341
2005	2,456	28	107	307	335	309	382	511	131	208	112	18	7	476	1,635	345
2006	2,469	28	109	301	340	310	380	517	135	208	113	20	8	472	1,649	349
2007	2,486	29	112	295	345	313	375	517	146	210	116	21	8	469	1,662	354
Females																
1981	2,685	33	121	380	430	359	305	456	142	265	155	27	11	579	1,506	600
1986	2,649	32	126	320	424	368	334	439	146	250	166	32	12	518	1,525	606
1991	2,639	32	126	309	369	402	351	437	141	249	168	38	16	499	1,528	612
1996	2,645	28	123	315	324	406	367	470	137	250	164	42	20	498	1,535	612
2000	2,631	26	112	310	313	369	397	488	138	246	166	43	22	480	1,535	616
2001	2,630	26	109	307	314	359	403	496	137	246	169	43	23	473	1,540	617
2002	2,623	25	106	303	315	344	406	504	137	247	171	41	23	466	1,538	619
2003	2,623	25	104	300	318	332	410	512	139	248	173	39	24	460	1,540	622
2004	2,632	26	103	297	321	325	412	521	141	248	175	38	24	457	1,549	627
2005	2,639	26	103	293	324	320	411	531	142	249	174	41	25	453	1,556	630
2006	2,647	27	104	287	328	317	410	541	145	247	174	43	25	450	1,564	634
2007	2,659	28	106	281	332	316	406	542	155	247	174	45	24	448	1,564	646
Northern Ireland																
Persons																
1981	1,543	27	106	282	271	200	175	227	68	116	57	..	..	444	874	224
1986	1,574	28	107	261	277	217	190	227	71	115	64	16	..	423	917	234
1991	1,607	26	106	260	256	240	200	241	70	121	69	14	6	417	945	246
1996	1,662	24	99	266	244	257	220	266	70	123	72	15	7	415	993	253
2000	1,683	22	95	259	237	247	243	284	73	123	75	16	7	403	1,020	259
2001	1,689	22	93	255	240	243	248	290	74	123	77	16	7	397	1,030	262
2002	1,697	22	91	253	243	238	251	296	75	125	79	16	7	393	1,037	266
2003	1,703	21	89	251	246	233	254	301	78	126	81	16	8	388	1,044	271
2004	1,710	22	87	248	250	229	256	305	81	127	82	16	8	383	1,052	275
2005	1,724	23	88	245	253	228	257	310	84	128	83	17	8	381	1,064	280
2006	1,742	23	89	242	258	229	259	316	87	130	83	18	8	380	1,077	284
2007	1,759	24	91	239	260	231	259	321	90	132	84	19	8	380	1,089	290
Males																
1981	757	14	54	145	140	102	87	109	32	50	21	..	..	228	454	75
1986	768	14	55	134	142	109	95	110	33	50	23	4	..	217	474	77
1991	783	13	54	133	131	119	100	118	32	53	26	4	1	213	487	83
1996	810	12	51	136	124	128	109	131	33	54	27	4	1	212	511	87
2000	820	11	49	133	120	122	119	141	35	55	29	5	2	207	524	90
2001	824	11	48	131	122	120	122	144	35	56	30	5	2	204	529	92
2002	829	11	47	130	124	117	123	147	36	56	31	5	2	202	534	94
2003	833	11	46	129	126	115	124	149	38	57	31	5	2	199	538	95
2004	836	11	45	127	128	113	125	151	39	58	32	5	2	197	542	97
2005	844	12	45	126	130	113	126	153	41	59	32	5	2	196	550	99
2006	853	12	46	124	132	113	127	156	42	60	33	6	2	195	558	101
2007	862	13	47	123	134	114	127	158	44	61	33	6	2	195	564	103
Females																
1981	786	13	52	137	130	98	88	118	37	66	37	..	..	216	420	150
1986	805	13	52	127	135	107	96	118	38	65	41	12	..	206	442	157
1991	824	13	52	127	125	121	100	123	38	67	44	10	4	203	458	163
1996	851	11	49	130	120	129	110	135	37	69	45	11	6	203	482	167
2000	862	11	46	126	118	125	124	143	38	68	46	11	6	196	497	169
2001	865	10	45	124	119	123	126	146	38	68	47	11	6	193	501	170
2002	868	11	44	123	119	120	128	149	39	68	48	11	6	191	504	173
2003	870	10	43	122	120	118	129	152	40	68	49	11	6	189	506	175
2004	874	11	42	121	122	116	130	154	42	69	50	11	6	187	509	178
2005	880	11	43	119	123	115	131	157	43	69	50	11	6	186	514	181
2006	888	11	43	118	126	115	132	160	45	69	51	12	6	185	520	183
2007	897	12	44	116	127	117	132	163	46	70	51	13	6	185	526	187

See notes on first page of table.

Table 1.5 Population: age, sex and legal marital status[1]

England and Wales

Numbers (thousands)

Mid-year	Total population	Males					Females				
		Single	Married	Divorced	Widowed	Total	Single	Married	Divorced	Widowed	Total
Aged											
16 and over											
1971	36,818	4,173	12,522	187	682	17,563	3,583	12,566	296	2,810	19,255
1976	37,486	4,369	12,511	376	686	17,941	3,597	12,538	533	2,877	19,545
1981	38,724	5,013	12,238	611	698	18,559	4,114	12,284	828	2,939	20,165
1986	39,837	5,625	11,867	917	695	19,103	4,617	12,000	1,165	2,953	20,734
1991	40,501	5,891	11,636	1,187	727	19,441	4,817	11,833	1,459	2,951	21,060
1996	40,827	6,225	11,310	1,346	733	19,614	5,168	11,433	1,730	2,881	21,212
1999	41,325	6,582	11,143	1,433	732	19,890	5,526	11,235	1,875	2,800	21,435
2000	41,569	6,721	11,113	1,456	731	20,022	5,650	11,199	1,927	2,772	21,547
2001	41,865	6,894	11,090	1,482	733	20,198	5,798	11,150	1,975	2,745	21,667
2002	42,135	7,062	11,043	1,524	730	20,358	5,944	11,094	2,031	2,709	21,777
2003	42,409	7,226	10,995	1,571	726	20,517	6,102	11,033	2,087	2,669	21,892
2004	42,731	7,419	10,941	1,617	722	20,700	6,279	10,980	2,144	2,628	22,031
2005	43,141	7,623	10,923	1,662	719	20,927	6,486	10,943	2,198	2,588	22,214
2006	43,494	7,833	10,881	1,696	716	21,126	6,683	10,893	2,244	2,548	22,367
2007	43,860	8,049	10,851	1,724	715	21,338	6,871	10,851	2,289	2,511	22,521
16–19											
1971	2,666	1,327	34	0	0	1,362	1,163	142	0	0	1,305
1976	2,901	1,454	28	0	0	1,482	1,289	129	0	0	1,419
1981	3,310	1,675	20	0	0	1,694	1,523	93	0	0	1,616
1986	3,131	1,587	10	0	0	1,596	1,484	49	1	0	1,535
1991	2,665	1,358	8	0	0	1,366	1,267	32	0	0	1,300
1996	2,402	1,209	6	0	0	1,216	1,164	21	0	0	1,186
1999	2,543	1,280	6	1	1	1,288	1,234	20	1	1	1,255
2000	2,523	1,276	6	1	1	1,283	1,221	18	1	1	1,240
2001	2,567	1,304	5	1	1	1,312	1,237	16	1	1	1,255
2002	2,630	1,351	5	1	1	1,357	1,258	13	1	1	1,273
2003	2,703	1,392	4	1	1	1,397	1,293	12	0	1	1,306
2004	2,771	1,424	3	0	0	1,428	1,331	11	0	0	1,343
2005	2,801	1,434	2	0	0	1,436	1,355	10	0	0	1,365
2006	2,829	1,457	2	0	0	1,459	1,363	7	0	0	1,370
2007	2,861	1,473	2	0	0	1,475	1,379	7	0	0	1,386
20–24											
1971	3,773	1,211	689	3	0	1,904	745	1,113	9	2	1,869
1976	3,395	1,167	557	4	0	1,728	725	925	16	2	1,667
1981	3,744	1,420	466	10	1	1,896	1,007	811	27	2	1,847
1986	4,171	1,768	317	14	0	2,099	1,383	657	32	1	2,072
1991	3,911	1,717	242	12	0	1,971	1,421	490	29	1	1,941
1996	3,291	1,538	117	3	0	1,658	1,361	260	11	1	1,633
1999	3,047	1,449	78	2	0	1,530	1,320	188	8	1	1,517
2000	3,088	1,470	74	3	0	1,548	1,352	180	8	1	1,540
2001	3,157	1,501	74	3	1	1,579	1,390	178	8	1	1,578
2002	3,212	1,530	73	3	1	1,606	1,427	170	8	1	1,606
2003	3,281	1,568	74	3	1	1,645	1,459	166	8	1	1,636
2004	3,376	1,632	75	3	1	1,712	1,491	163	8	2	1,664
2005	3,477	1,693	73	3	1	1,771	1,539	157	8	2	1,706
2006	3,558	1,741	67	3	1	1,812	1,591	146	7	1	1,746
2007	3,661	1,813	64	3	1	1,881	1,637	136	6	1	1,780
25–29											
1971	3,267	431	1,206	16	1	1,654	215	1,367	29	4	1,614
1976	3,758	533	1,326	39	2	1,900	267	1,522	65	5	1,859
1981	3,372	588	1,057	54	1	1,700	331	1,247	89	4	1,671
1986	3,713	835	949	79	1	1,863	527	1,207	113	4	1,850
1991	4,154	1,132	856	82	1	2,071	800	1,158	123	2	2,083
1996	3,950	1,273	650	46	1	1,970	977	906	93	3	1,980
1999	3,687	1,304	497	34	1	1,836	1,051	725	72	3	1,851
2000	3,605	1,305	459	31	1	1,796	1,065	677	65	3	1,810
2001	3,487	1,293	420	28	1	1,742	1,059	625	58	3	1,745
2002	3,365	1,277	384	26	1	1,688	1,049	574	52	3	1,676
2003	3,284	1,265	356	24	1	1,647	1,051	536	48	2	1,638
2004	3,280	1,278	339	23	1	1,641	1,078	513	46	2	1,639
2005	3,354	1,320	331	23	1	1,675	1,128	504	45	2	1,679
2006	3,434	1,371	324	22	1	1,718	1,178	490	45	2	1,716
2007	3,526	1,422	326	22	1	1,770	1,223	486	44	2	1,756

1 The mid-2002 to mid-2007 marital status estimates include adjustments for marriages to England and Wales residents occurring abroad so differ from those previously published. The adjustments are made using information collected from the International Passenger Survey.

Table 1.5 continued **Population: age, sex and legal marital status[1]**

England and Wales

Numbers (thousands)

Mid-year	Total population	Males					Females				
		Single	Married	Divorced	Widowed	Total	Single	Married	Divorced	Widowed	Total
30–34											
1971	2,897	206	1,244	23	3	1,475	111	1,269	34	8	1,422
1976	3,220	236	1,338	55	3	1,632	118	1,388	75	8	1,588
1981	3,715	318	1,451	97	3	1,869	165	1,544	129	9	1,846
1986	3,338	355	1,197	124	2	1,679	206	1,293	154	6	1,660
1991	3,708	520	1,172	155	2	1,849	335	1,330	189	5	1,859
1996	4,126	776	1,135	138	2	2,050	551	1,316	201	7	2,076
1999	4,113	877	1,043	121	3	2,044	651	1,223	188	7	2,069
2000	4,076	904	1,007	114	2	2,027	679	1,182	181	7	2,049
2001	4,050	934	971	108	2	2,016	711	1,142	174	7	2,033
2002	3,992	951	927	103	2	1,984	739	1,097	166	6	2,009
2003	3,919	964	881	99	2	1,947	760	1,049	158	6	1,972
2004	3,810	967	834	94	2	1,897	768	983	147	5	1,913
2005	3,724	972	793	88	2	1,856	778	948	137	5	1,868
2006	3,606	972	744	81	2	1,799	782	896	124	5	1,808
2007	3,473	962	701	74	1	1,738	777	840	114	4	1,735
35–44											
1971	5,736	317	2,513	48	13	2,891	201	2,529	66	48	2,845
1976	5,608	286	2,442	104	12	2,843	167	2,427	129	42	2,765
1981	5,996	316	2,519	178	12	3,024	170	2,540	222	41	2,972
1986	6,856	396	2,738	293	12	3,438	213	2,815	350	39	3,418
1991	7,022	477	2,632	384	11	3,504	280	2,760	444	34	3,517
1996	7,017	653	2,426	398	12	3,489	427	2,568	497	36	3,528
1999	7,475	832	2,459	408	13	3,711	577	2,617	533	37	3,763
2000	7,661	899	2,481	410	12	3,802	635	2,640	547	37	3,859
2001	7,816	963	2,494	411	12	3,881	692	2,649	558	36	3,935
2002	7,964	1,027	2,499	420	12	3,957	749	2,653	570	35	4,007
2003	8,058	1,080	2,488	427	12	4,007	801	2,638	579	33	4,051
2004	8,133	1,126	2,466	433	11	4,036	853	2,623	588	32	4,097
2005	8,194	1,173	2,452	436	11	4,073	903	2,597	590	31	4,121
2006	8,213	1,219	2,419	431	11	4,080	955	2,564	585	30	4,134
2007	8,209	1,259	2,385	422	10	4,076	1,004	2,525	574	29	4,132
45–64											
1971	11,887	502	4,995	81	173	5,751	569	4,709	125	733	6,136
1976	11,484	496	4,787	141	160	5,583	462	4,568	188	683	5,901
1981	11,040	480	4,560	218	147	5,405	386	4,358	271	620	5,635
1986	10,860	461	4,422	331	141	5,355	327	4,220	388	570	5,505
1991	10,960	456	4,394	456	127	5,433	292	4,211	521	503	5,527
1996	11,820	528	4,587	628	121	5,864	318	4,466	732	440	5,956
1999	12,198	589	4,627	706	121	6,043	355	4,541	844	415	6,155
2000	12,328	615	4,638	727	121	6,101	372	4,564	881	410	6,227
2001	12,447	644	4,647	747	121	6,159	391	4,578	918	401	6,289
2002	12,573	670	4,647	775	119	6,211	413	4,599	959	391	6,362
2003	12,710	700	4,653	807	118	6,278	437	4,616	999	380	6,432
2004	12,852	734	4,657	840	116	6,347	464	4,630	1,041	370	6,505
2005	13,021	771	4,672	873	115	6,431	496	4,650	1,084	361	6,590
2006	13,243	813	4,703	906	115	6,537	534	4,688	1,130	355	6,706
2007	13,439	857	4,716	935	114	6,621	576	4,719	1,175	347	6,818
65 and over											
1971	6,592	179	1,840	17	492	2,527	580	1,437	32	2,016	4,065
1976	7,119	197	2,033	33	510	2,773	569	1,579	60	2,138	4,347
1981	7,548	216	2,167	54	534	2,971	533	1,692	90	2,263	4,578
1986	7,768	223	2,234	76	539	3,072	477	1,759	127	2,333	4,696
1991	8,080	231	2,332	99	586	3,248	422	1,853	152	2,405	4,832
1996	8,221	247	2,390	134	597	3,367	369	1,897	196	2,393	4,854
1999	8,262	251	2,431	161	594	3,437	338	1,922	230	2,336	4,825
2000	8,287	252	2,449	171	593	3,466	327	1,938	243	2,313	4,821
2001	8,342	254	2,478	183	595	3,510	318	1,960	259	2,295	4,832
2002	8,398	255	2,509	196	594	3,554	308	1,987	276	2,272	4,844
2003	8,454	257	2,539	209	592	3,597	301	2,017	295	2,245	4,857
2004	8,510	258	2,568	223	591	3,640	293	2,046	314	2,216	4,870
2005	8,571	259	2,599	238	589	3,685	286	2,078	334	2,187	4,885
2006	8,611	260	2,622	252	587	3,722	279	2,102	353	2,155	4,889
2007	8,690	263	2,658	268	587	3,775	274	2,138	375	2,128	4,915

Table 2.1 Vital statistics summary

Constituent countries of the United Kingdom

Numbers (thousands) and rates

Year and quarter	All live births		Live births outside marriage		Marriages		Civil Partnerships		Divorces		Deaths		Infant mortality[6]		Neonatal mortality[7]		Perinatal mortality[8]	
	Number	Rate[1]	Number	Rate[2]	Number	Rate[3]	Number	Rate[4]	Number	Rate[5]	Number	Rate[1]	Number	Rate[2]	Number	Rate[2]	Number	Rate[9]
United Kingdom																		
1976	675.5	12.0	61.1	90	406.0	..	:	:	135.4	..	680.8	12.1	9.79	14.5	6.68	9.9	12.25	18.0
1981	730.7	13.0	91.3	125	397.8	49.4	:	:	156.4	11.3	658.0	11.7	8.16	11.2	4.93	6.7	8.79	12.0
1986	754.8	13.3	154.3	204	393.9	..	:	:	168.2	..	660.7	11.7	7.18	9.5	4.00	5.3	7.31	9.6
1991	792.3	13.8	236.1	298	349.7	..	:	:	173.5	..	646.2	11.2	5.82	7.4	3.46	4.4	6.45	8.1
1996	733.2	12.6	260.4	355	317.5	..	:	:	171.7	..	636.0	10.9	4.50	6.1	3.00	4.1	6.41	8.7
1999	700.0	11.9	271.6	388	301.1	..	:	:	158.7	..	632.1	10.8	4.05	5.8	2.73	3.9	5.79	8.2
2000	679.0	11.5	268.1	395	305.9	..	:	:	154.6	..	608.4	10.3	3.81	5.6	2.63	3.9	5.56	8.1
2001	669.1	11.3	268.0	401	286.1	..	:	:	156.8	..	602.3	10.2	3.66	5.5	2.44	3.7	5.39	8.0
2002	668.8	11.3	271.7	406	293.0	..	:	:	160.5	..	606.2	10.2	3.54	5.3	2.37	3.6	5.53	8.2
2003	695.6	11.7	288.5	415	308.6	..	:	:	166.7	..	612.0	10.3	3.69	5.3	2.54	3.7	5.92	8.5
2004	716.0	12.0	302.6	423	313.6	..	:	:	167.1	..	583.1	9.7	3.66	5.1	2.49	3.5	5.88	8.2
2005	722.5	12.0	310.2	429	286.8	..	1.95[10]	..	155.1	..	582.7	9.7	3.68	5.1	2.52	3.5	5.78	8.0
2006	748.6	12.4	326.8	437	277.6	..	16.11	..	148.1	..	572.2	9.4	3.74	5.0	2.61	3.5	5.94	7.9
2007	772.2	12.7	343.2	444	270.0[P]	..	8.73[P]	..	144.2[P]	..	574.7	9.4	3.74	4.8	2.55	3.3	6.00	7.7
2006 March	178.9	12.0	77.5	433	30.3	..	4.87	..	37.7	..	159.9	10.7	0.90	5.1	0.61	3.4	1.45	8.1
June	186.0	12.3	80.2	431	76.9	..	4.36	..	36.7	..	141.4	9.4	0.94	5.0	0.65	3.5	1.50	8.0
Sept	195.2	12.8	85.8	439	121.9	..	4.49	..	37.0	..	130.7	8.6	0.93	4.8	0.67	3.4	1.54	7.8
Dec	188.5	12.3	83.3	442	48.6	..	2.38	..	36.7	..	140.2	9.2	0.97	5.2	0.68	3.6	1.45	7.6
2007 March	184.4	12.3	81.9	444	31.0[P]	..	1.69	..	38.9[P]	..	159.3	10.6	0.91	4.9	0.64	3.4	1.47	7.9
June	189.8	12.5	82.6	435	75.7[P]	..	2.37	..	37.2[P]	..	138.0	9.1	0.99	5.2	0.66	3.5	1.53	8.0
Sept	202.8	13.2	90.5	446	115.8[P]	..	2.96	..	36.7[P]	..	129.9	8.4	0.96	4.6	0.63	3.1	1.50	7.4
Dec	195.3	12.7	88.1	451	47.4[P]	..	1.71	..	31.4[P]	..	147.5	9.6	0.90	4.6	0.62	3.2	1.50	7.6
2008 March	195.4[P]	12.8[P]	88.8[P]	455[P]	..	..	1.25[P]	..	..	..	155.4[P]	10.2[P]	0.95[P]	4.9[P]	0.66[P]	3.4[P]	1.52[P]	7.7[P]
June	198.0[P]	12.5[P]	82.6[P]	449[P]	..	..	1.94[P]	..	..	..	139.8[P]	9.2[P]	0.82[P]	4.2[P]	0.59[P]	3.0[P]	1.47[P]	7.4[P]
Sept	204.0[P]	13.3[P]	93.0[P]	456[P]	..	..	2.46[P]	..	..	..	129.8[P]	8.4[P]	0.96[P]	4.7[P]	0.68[P]	3.3[P]	1.46[P]	7.1[P]
England and Wales																		
1976	584.3	11.8	53.8	92	358.6	57.7	:	:	126.7	10.1	598.5	12.1	8.34	14.3	5.66	9.7	10.45	17.7
1981	634.5	12.8	81.0	128	352.0	49.6	:	:	145.7	11.9	577.9	11.6	7.02	11.1	4.23	6.7	7.56	11.8
1986	661.0	13.2	141.3	214	347.9	43.6	:	:	153.9	12.9	581.2	11.6	6.31	9.6	3.49	5.3	6.37	9.6
1991	699.2	13.8	211.3	302	306.8	36.0	:	:	158.7	13.5	570.0	11.2	5.16	7.4	3.05	4.4	5.65	8.0
1996	649.5	12.6	232.7	358	279.0	30.9	:	:	157.1	13.8	560.1	10.9	3.99	6.1	2.68	4.1	5.62	8.6
1999	621.9	12.0	241.9	389	263.5	27.8	:	:	144.6	12.9	556.1	10.7	3.62	5.8	2.44	3.9	5.14	8.2
2000	604.4	11.6	238.6	395	268.0	27.8	:	:	141.1	12.7	535.7	10.3	3.38	5.6	2.34	3.9	4.96	8.2
2001	594.6	11.4	238.1	400	249.2	25.4	:	:	143.8	12.9	530.4	10.1	3.24	5.4	2.14	3.6	4.76	8.0
2002	596.1	11.3	242.0	406	255.6	25.6	:	:	147.7	13.3	533.5	10.1	3.13	5.2	2.13	3.6	4.99	8.3
2003	621.5	11.8	257.2	414	270.1	26.5	:	:	153.5	13.9	538.3	10.2	3.31	5.3	2.26	3.6	5.36	8.6
2004	639.7	12.1	269.7	422	273.1	26.2	:	:	153.4	14.0	512.5	9.7	3.22	5.0	2.21	3.5	5.39	8.4
2005	645.8	12.1	276.5	428	247.8	23.3	1.86[10]	5.8[10]	141.8	13.0	512.7	9.7	3.26	5.0	2.23	3.4	5.21	8.0
2006	669.6	12.5	291.4	435	239.5	22.0	14.94	1.4	132.6	12.2	502.6	9.4	3.37	5.0	2.35	3.5	5.36	8.0
2007	690.0	12.8	305.6	443	231.4[P]	20.9[P]	7.93	0.7	128.5[P]	11.8[P]	504.1	9.3	3.35	4.8	2.28	3.3	5.37	7.7
2006 March	159.5	12.0	68.7	431	25.9	9.7	4.58	1.7	34.3	12.8	141.0	10.6	0.82	5.2	0.56	3.5	1.32	8.2
June	166.2	12.4	71.4	430	66.3	24.5	4.01	1.5	33.0	12.1	123.9	9.2	0.84	5.1	0.58	3.5	1.37	8.2
Sept	174.9	12.9	76.8	439	106.2	38.8	4.18	1.5	32.9	12.0	114.6	8.5	0.85	4.8	0.60	3.4	1.38	7.9
Dec	169.0	12.5	74.5	441	41.2	15.0	2.18	0.8	32.4	11.8	123.1	9.1	0.86	5.1	0.60	3.6	1.30	7.6
2007 March	164.0	12.3	72.5	442	26.7[P]	9.8[P]	1.55	0.6	34.7[P]	13.0[P]	139.3	10.5	0.80	4.9	0.56	3.4	1.31	7.9
June	169.5	12.6	73.5	434	65.2[P]	23.6[P]	2.16	0.8	33.1[P]	12.3[P]	121.0	9.0	0.88	5.2	0.60	3.5	1.36	8.0
Sept	181.4	13.3	80.8	445	99.4[P]	35.6[P]	2.68	1.0	33.0[P]	12.1[P]	114.0	8.4	0.84	4.6	0.57	3.1	1.35	7.4
Dec	175.0	12.8	78.7	450	40.1[P]	14.4[P]	1.54	0.6	27.6[P]	10.1[P]	129.7	9.5	0.83	4.7	0.56	3.2	1.35	7.7
2008 March	173.8[P]	12.8[P]	78.5[P]	452[P]	..	..	1.13[P]	0.4[P]	31.9[P]	11.8[P]	136.1[P]	10.1[P]	0.86[P]	5.0[P]	0.60[P]	3.4[P]	1.36[P]	7.8[P]
June	176.8[P]	13.1[P]	79.3[P]	449[P]	..	..	1.80[P]	0.7[P]	30.8[P]	11.4[P]	122.7[P]	9.1[P]	0.79[P]	4.5[P]	0.53[P]	3.0[P]	1.32[P]	7.5[P]
Sept	182.0[P]	13.3[P]	82.8[P]	455[P]	..	..	2.24[P]	0.8[P]	30.4[P]	11.2[P]	113.8[P]	8.3[P]	0.86[P]	4.7[P]	0.60[P]	3.3[P]	1.30[P]	7.1[P]
England																		
1976	550.4	11.8	50.8	92	339.0	..	:	:	..	..	560.3	12.0	7.83	14.2	5.32	9.7	9.81	17.6
1981	598.2	12.8	76.9	129	332.2	..	:	:	..	..	541.0	11.6	6.50	10.9	3.93	6.6	7.04	11.7
1986	623.6	13.2	133.5	214	328.4	..	:	:	146.0	..	544.5	11.6	5.92	9.5	3.27	5.2	5.98	9.5
1991	660.8	13.8	198.9	301	290.1	..	:	:	150.1	..	534.0	11.2	4.86	7.3	2.87	4.3	5.33	8.0
1996	614.2	12.7	218.2	355	264.2	..	:	:	148.7	..	524.0	10.8	3.74	6.1	2.53	4.1	5.36	8.7
1999	589.5	12.0	226.7	385	249.5	..	:	:	137.0	..	519.6	10.8	3.38	5.7	2.29	3.9	4.86	8.2
2000	572.8	11.7	223.8	391	253.8	..	:	:	133.9	..	501.0	10.2	3.18	5.6	2.21	3.9	4.69	8.2
2001	563.7	11.4	223.3	396	236.2	..	:	:	136.4	..	496.1	10.0	3.04	5.4	2.02	3.6	4.51	8.0
2002	565.7	11.4	227.0	401	242.1	..	:	:	140.2	..	499.1	10.1	2.97	5.2	2.02	3.6	4.75	8.3
2003	589.9	11.8	241.4	409	255.6	..	:	:	145.8	..	503.4	10.1	3.14	5.3	2.15	3.7	5.09	8.6
2004	607.2	12.1	253.1	417	258.2	..	:	:	145.5	..	479.2	9.6	3.03	5.0	2.09	3.4	5.10	8.4
2005	613.0	12.1	259.4	423	233.8	..	1.79[10]	..	134.6	..	479.4	9.6	3.10	5.0	2.12	3.5	4.92	8.0
2006	635.7	12.5	273.5	430	226.0	..	14.38	..	125.6	..	470.3	9.3	3.19	5.0	2.24	3.5	5.11	8.0
2007	655.4	12.8	287.0	438[P]	215.6[P]	..	7.64	..	121.9[P]	..	470.7	9.2	3.13	4.8	2.15	3.3	5.10	7.7
2006 March	151.4	12.1	64.5	426	24.4	..	4.42	..	32.5	..	132.0	10.5	0.79	5.2	0.54	3.6	1.26	8.3
June	157.8	12.5	67.0	425	62.5	..	3.86	..	31.2	..	115.9	9.2	0.80	5.1	0.56	3.5	1.31	8.2
Sept	166.0	13.0	72.0	434	100.1	..	4.02	..	31.2	..	107.1	8.4	0.80	4.8	0.57	3.4	1.31	7.8
Dec	160.5	12.5	70.0	436	38.9	..	2.09	..	30.7	..	115.3	9.0	0.81	5.0	0.57	3.6	1.24	7.7
2007 March	155.9	12.4	68.1	437	25.4[P]	..	1.49	..	32.9[P]	..	130.3	10.3	0.74	4.7	0.52	3.3	1.23	7.8
June	161.0	12.6	69.0	429	61.6[P]	..	2.06	..	31.4[P]	..	112.9	8.9	0.84	5.2	0.57	3.5	1.30	8.0
Sept	172.2	13.4	75.9	441	93.7[P]	..	2.60	..	31.4[P]	..	106.4	8.3	0.79	4.6	0.54	3.1	1.29	7.5
Dec	166.3	12.9	74.0	445	37.9[P]	..	1.48	..	26.2[P]	..	121.2	9.4	0.76	4.6	0.53	3.2	1.28	7.6
2008 March	165.0[P]	12.9[P]	73.7[P]	447[P]	..	..	1.08[P]	..	30.3[P]	..	127.3[P]	9.9[P]	0.82[P]	5.0[P]	0.60[P]	3.6[P]	1.29[P]	7.8[P]
June	167.8[P]	13.1[P]	74.3[P]	443[P]	..	..	1.73[P]	..	29.2[P]	..	114.7[P]	9.0[P]	0.74[P]	4.4[P]	0.50[P]	3.0[P]	1.25[P]	7.4[P]
Sept	172.8[P]	13.4[P]	77.7[P]	450[P]	..	..	2.14[P]	..	28.8[P]	..	106.5[P]	8.2[P]	0.82[P]	4.5[P]	0.57[P]	3.1[P]	1.24[P]	6.8[P]

Note: Death figures for England and Wales represent the number of deaths registered in each year up to 1992, and the number of deaths occurring in each year from 1993 to 2005. Death figures for 2006, 2007 and provisional death figures for 2008 relate to registrations.
Birth and death figures for England and also for Wales each exclude events for persons usually resident outside England and Wales. These events are, however, included in the totals for England and Wales combined, and for the United Kingdom.
2007 Perinatal figures have been updated to include late receipt of stillbirth records.
From 1981 births to non-resident mothers in Northern Ireland are excluded from the figures for Northern Ireland, and for the United Kingdom.
Infant, neonatal and perinatal mortality rates for Northern Ireland have now been amended to take account of the non-resident livebirths.
The birth and death rates for 2008 are based on 2006-based population projections for 2008. Marriage, civil partnership and divorce rates for 2008 are based on 2007 marital status estimates. Rates using marital estimates have been revised from 2002 onwards to include the adjustments for marriages to England and Wales residents occurring abroad – see Table 1.5.

Table 2.1 continued **Vital statistics summary**

Constituent countries of the United Kingdom

Numbers (thousands) and rates

Year and quarter	All live births		Live births outside marriage		Marriages		Civil Partnerships		Divorces		Deaths		Infant mortality[6]		Neonatal mortality[7]		Perinatal mortality[8]	
	Number	Rate[1]	Number	Rate[2]	Number	Rate[3]	Number	Rate[4]	Number	Rate[5]	Number	Rate[1]	Number	Rate[2]	Number	Rate[2]	Number	Rate[9]
Wales																		
1976	33.4	11.9	2.9	86	19.5	..	:	:	..	..	36.3	13.0	0.46	13.7	0.32	9.6	0.64	19.0
1981	35.8	12.7	4.0	112	19.8	..	:	:	..	..	35.0	12.4	0.45	12.6	0.29	8.1	0.51	14.1
1986	37.0	13.2	7.8	211	19.5	..	:	:	7.8	..	34.7	12.3	0.35	9.5	0.21	5.6	0.38	10.3
1991	38.1	13.3	12.3	323	16.6	..	:	:	8.4	..	34.1	11.9	0.25	6.6	0.16	4.1	0.30	7.9
1996	34.9	12.1	14.4	412	14.8	..	:	:	8.4	..	34.6	12.0	0.20	5.6	0.13	3.6	0.26	7.5
1999	32.1	11.1	14.8	461	14.0	..	:	:	7.5	..	35.0	12.1	0.20	6.1	0.13	4.0	0.25	7.7
2000	31.3	10.8	14.8	472	14.1	..	:	:	7.2	..	33.3	11.5	0.17	5.3	0.11	3.5	0.23	7.2
2001	30.6	10.5	14.8	483	13.0	..	:	:	7.4	..	33.0	11.3	0.16	5.4	0.11	3.5	0.23	7.5
2002	30.2	10.3	15.0	497	13.5	..	:	:	7.6	..	33.2	11.4	0.14	4.5	0.10	3.2	0.24	7.7
2003	31.4	10.7	15.8	503	14.5	..	:	:	7.7	..	33.7	11.5	0.13	4.3	0.10	3.1	0.24	7.6
2004	32.3	11.0	16.6	513	14.9	..	:	:	7.9	..	32.1	10.9	0.16	4.9	0.10	3.1	0.26	8.0
2005	32.6	11.0	17.1	524	14.0	..	0.07[10]	..	7.2	..	32.1	10.9	0.13	4.1	0.09	2.9	0.24	7.4
2006	33.6	11.3	17.8	530	13.5	..	0.56	..	7.0	..	31.1	10.5	0.14	4.1	0.09	2.8	0.23	6.9
2007	34.4	11.5	18.5	538	12.8[p]	..	0.29	..	6.7[p]	..	32.1	10.8	0.18	5.3	0.12	3.4	0.25	7.3
2006 March	8.1	11.1	4.2	520	1.4	..	0.16	..	1.8	..	8.7	11.9	0.03	3.1	0.02	2.0	0.06	7.0
June	8.3	11.2	4.3	523	3.8	..	0.15	..	1.7	..	7.6	10.3	0.03	4.1	0.02	2.4	0.05	6.3
Sept	8.8	11.8	4.8	543	6.1	..	0.16	..	1.7	..	7.2	9.7	0.04	4.0	0.03	3.1	0.07	7.7
Dec	8.4	11.2	4.5	535	2.2	..	0.09	..	1.7	..	7.5	10.1	0.04	5.1	0.03	3.6	0.06	6.6
2007 March	8.1	11.0	4.3	536	1.3[p]	..	0.06	..	1.8[p]	..	8.8	11.9	0.05	6.3	0.03	3.7	0.07	9.0
June	8.5	11.4	4.5	530	3.6[p]	..	0.10	..	1.8[p]	..	7.9	10.6	0.04	4.5	0.02	2.8	0.06	6.8
Sept	9.1	12.1	4.9	541	5.7[p]	..	0.08	..	1.7[p]	..	7.3	9.7	0.04	4.4	0.03	2.8	0.05	5.7
Dec	8.7	11.6	4.8	547	2.2[p]	..	0.06	..	1.4[p]	..	8.3	11.0	0.05	6.1	0.04	4.1	0.07	7.9
2008 March	8.7[p]	11.8[p]	4.8[p]	552[p]	..	..	0.06[p]	..	1.6[p]	..	8.6[p]	11.5[p]	0.04[p]	4.1[p]	0.03[p]	3.0[p]	0.06[p]	6.8[p]
June	9.0[p]	12.0[p]	5.0[p]	555[p]	..	..	0.07[p]	..	1.5[p]	..	7.7[p]	10.4[p]	0.04[p]	4.3[p]	0.03[p]	3.3[p]	0.06[p]	6.5[p]
Sept	9.2[p]	12.2[p]	5.1[p]	556[p]	..	..	0.10[p]	..	1.6[p]	..	7.3[p]	9.6[p]	0.04[p]	3.8[p]	0.03[p]	2.9[p]	0.06[p]	6.2[p]
Scotland																		
1976	64.9	12.5	6.0	93	37.5	53.8	:	:	8.1	6.5	65.3	12.5	0.96	14.8	0.67	10.3	1.20	18.3
1981	69.1	13.4	8.5	122	36.2	47.5	:	:	9.9	8.0	63.8	12.3	0.78	11.3	0.47	6.9	0.81	11.6
1986	65.8	12.9	13.6	206	35.8	42.9	:	:	12.8	10.7	63.5	12.4	0.58	8.8	0.34	5.2	0.67	10.2
1991	67.0	13.2	19.5	291	33.8	39.0	:	:	12.4	10.6	61.0	12.0	0.47	7.1	0.29	4.6	0.58	8.6
1996	59.3	11.6	21.4	360	30.2	33.2	:	:	12.3	10.9	60.7	11.9	0.37	6.2	0.23	3.9	0.55	9.2
1999	55.1	10.9	22.7	412	29.9	31.5	:	:	11.9	10.9	60.3	11.9	0.28	5.0	0.18	3.3	0.42	7.6
2000	53.1	10.5	22.6	426	30.4	31.6	:	:	11.1	10.3	57.8	11.4	0.31	5.7	0.21	4.0	0.45	8.4
2001	52.5	10.4	22.8	433	29.6	31.0	:	:	10.6	9.7	57.4	11.3	0.29	5.5	0.20	3.8	0.45	8.5
2002	51.3	10.1	22.5	440	29.8	30.8	:	:	10.8	10.0	58.1	11.5	0.27	5.3	0.16	3.2	0.39	7.6
2003	52.4	10.4	23.9	455	30.8	31.3	:	:	10.1	10.2	58.5	11.6	0.27	5.1	0.18	3.4	0.42	8.0
2004	54.0	10.6	25.2	467	32.2	32.1	:	:	11.2	10.5	56.2	11.1	0.27	4.9	0.17	3.1	0.44	8.1
2005	54.4	10.7	25.6	471	30.9	30.3	0.08[10]	2.5[10]	10.9	10.3	55.7	11.0	0.28	5.2	0.19	3.5	0.42	7.7
2006	55.7	10.9	26.6	477	29.9	28.7	1.05	1.0	13.0	12.3	55.1	10.8	0.25	4.5	0.17	3.1	0.42	7.4
2007	57.8	11.2	28.4	491	29.9	28.1	0.69	0.6	12.8	12.2	56.0	10.9[p]	0.27	4.7	0.19	3.2	0.45	7.8
2008	..	..	..	..	28.9[p]	27.2[p]	0.53[p]	0.5[p]	11.5[p]	11.0[p]	..	..	..	..	..	..	..	..
2006 March	13.6	10.8	6.6	487	3.5	13.6	0.26	1.0	2.6	10.1	14.9	11.8	0.05	3.7	0.03	2.4	0.09	6.7
June	14.0	11.0	6.7	475	8.3	32.1	0.32	1.2	3.1	11.7	13.9	10.9	0.07	5.0	0.05	3.3	0.09	6.4
Sept	14.2	11.0	6.7	471	12.2	46.4	0.28	1.1	3.6	13.4	12.7	9.8	0.05	3.8	0.04	2.9	0.11	7.8
Dec	13.9	10.8	6.6	477	5.9	22.4	0.19	0.7	3.7	14.1	13.6	10.6	0.07	5.3	0.04	3.7	0.12	8.7
2007 March	14.2	11.2	7.1	501	3.3	12.7	0.11	0.4	3.3	12.8	15.8	12.5	0.07	4.9	0.05	3.6	0.12	8.1
June	14.3	11.1	6.9	482	8.1	30.7	0.18	0.7	3.3	12.7	13.4	10.4	0.08	5.3	0.05	3.4	0.12	8.6
Sept	14.9	11.5	7.2	485	12.6	47.1	0.25	0.9	3.0	11.4	12.6	9.7	0.07	4.6	0.05	3.0	0.11	7.1
Dec	14.4	11.1	7.1	497	5.8	21.6	0.15	0.6	3.1	11.7	14.2	10.9	0.06	3.9	0.04	2.9	0.11	7.5
2008 March	15.1[p]	11.8[p]	7.7[p]	510[p]	3.4[p]	13.0[p]	0.10[p]	0.4[p]	2.8[p]	10.6[p]	15.1[p]	11.8[p]	0.06[p]	3.9[p]	0.04[p]	2.8[p]	0.11[p]	7.0[p]
June	14.9[p]	11.6[p]	7.3[p]	488[p]	7.9[p]	29.9[p]	0.11[p]	0.4[p]	3.0[p]	11.6[p]	13.5[p]	10.5[p]	0.06[p]	4.0[p]	0.04[p]	2.5[p]	0.11[p]	7.5[p]
Sept	15.5[p]	12.1[p]	7.7[p]	498[p]	11.9[p]	44.5[p]	0.20[p]	0.7[p]	2.9[p]	10.8[p]	12.6[p]	9.7[p]	0.07[p]	4.8[p]	0.05[p]	3.4[p]	0.11[p]	6.9[p]
Dec	..	..	..	..	5.7[p]	21.2[p]	0.12[p]	0.4[p]	2.9[p]	10.9[p]	..	..	..	..	..	..	..	..
Northern Ireland																		
1976	26.4	17.3	1.3	50	9.9	..	:	:	0.6	..	17.0	11.2	0.48	18.3	0.35	13.3	0.59	22.3
1981	27.2	17.6	1.9	70	9.6	45.4	:	:	1.4	4.2	16.3	10.6	0.36	13.2	0.23	8.3	0.42	15.3
1986	28.0	17.8	3.6	128	10.2	..	:	:	1.5	..	16.1	10.3	0.36	13.2	0.23	8.3	0.42	15.3
1991	26.0	16.2	5.3	203	9.2	..	:	:	2.3	..	15.1	9.4	0.19	7.4	0.12	4.6	0.22	8.4
1996	24.4	14.7	6.3	260	8.3	..	:	:	2.3	..	15.2	9.2	0.14	5.8	0.09	3.7	0.23	9.4
1999	23.0	13.7	7.0	303	7.6	..	:	:	2.3	..	15.7	9.3	0.15	6.4	0.11	4.8	0.23	10.0
2000	21.5	12.8	6.8	318	7.6	..	:	:	2.4	..	14.9	8.9	0.11	5.0	0.08	3.8	0.16	7.2
2001	22.0	13.0	7.1	325	7.3	..	:	:	2.4	..	14.5	8.6	0.13	6.0	0.10	4.5	0.19	8.4
2002	21.4	12.6	7.2	335	7.6	..	:	:	2.2	..	14.6	8.6	0.10	4.6	0.07	3.5	0.19	8.7
2003	21.6	12.7	7.4	344	7.8	..	:	:	2.3	..	14.5	8.5	0.12	5.2	0.09	4.0	0.18	8.0
2004	22.3	13.0	7.7	345	8.3	..	:	:	2.5	..	14.4	8.4	0.12	5.5	0.08	3.7	0.19	8.0
2005	22.3	12.9	8.1	363	8.1	..	0.01[10]	..	2.4	..	14.2	8.3	0.14	6.1	0.11	4.9	0.19	8.1
2006	23.3	13.4	8.8	380	8.3	..	0.12	..	2.6	..	14.5	8.4	0.12	5.1	0.09	3.8	0.17	6.9
2007	24.5	13.9	9.3	379	8.7	..	0.11	..	2.9[p]	..	14.6	8.3	0.12	4.9	0.08	3.2	0.17	6.9
2008	..	..	..	..	..	..	0.09[p]	..	..	..	..	..	..	..	..	..	..	..
2006 March	5.8	13.6	2.2	370	0.9	..	0.03	..	0.7	..	4.0	9.4	0.03	5.2	0.02	3.2	0.04	6.7
June	5.8	13.3	2.2	381	2.3	..	0.04	..	0.7	..	3.6	8.4	0.03	4.6	0.02	3.6	0.04	7.3
Sept	6.1	13.9	2.3	358	3.5	..	0.03	..	0.5	..	3.4	7.8	0.03	4.8	0.02	3.5	0.05	7.4
Dec	5.6	12.8	2.2	393	1.5	..	0.02	..	0.6	..	3.5	7.9	0.03	5.8	0.03	4.9	0.04	6.3
2007 March	6.1	14.2	2.4	383	1.0	..	0.02	..	0.9	..	4.2	9.7	0.04	6.7	0.03	4.6	0.05	7.6
June	6.0	13.7	2.2	365	2.4	..	0.03	..	0.7	..	3.6	8.2	0.03	5.1	0.02	2.9	0.04	6.7
Sept	6.5	14.5	2.5	386	3.8	..	0.04	..	0.7	..	3.3	7.3	0.03	4.6	0.02	3.2	0.05	7.0
Dec	5.9	13.2	2.2	380	1.6	..	0.02	..	0.6	..	3.6	8.1	0.02	3.3	0.01	2.2	0.04	6.5
2008 March	6.5[p]	14.8[p]	2.4[p]	396[p]	1.1[p]	..	0.02[p]	..	..	..	4.1[p]	9.4[p]	0.03[p]	4.6[p]	0.03[p]	3.9[p]	0.05[p]	7.3[p]
June	6.3[p]	14.3[p]	2.4[p]	384[p]	2.2[p]	..	0.02[p]	..	..	..	3.6[p]	8.2[p]	0.03[p]	4.7[p]	0.02[p]	3.6[p]	0.04[p]	6.6[p]
Sept	6.5[p]	14.4[p]	2.5[p]	386[p]	3.6[p]	..	0.02[p]	..	..	..	3.4[p]	7.7[p]	0.03[p]	3.8[p]	0.02[p]	2.7[p]	0.05[p]	7.5[p]
Dec	..	..	..	..	..	..	0.02[p]	..	..	..	..	..	..	..	..	..	..	..

1 Per 1,000 population of all ages.
2 Per 1,000 live births.
3 Persons marrying per 1,000 unmarried population aged 16 and over.
4 Persons forming a civil partnership per 1,000 unmarried population aged 16 and over.
5 Persons divorcing per 1,000 married population.
6 Deaths under 1 year.
7 Deaths under 4 weeks.
8 Stillbirths and deaths under 1 week.
9 Per 1,000 live births and stillbirths.
10 The Civil Partnership Act 2004 came into force on 5 December 2005 in the UK - see Notes to tables.
p provisional

Table 2.2 Key demographic and health indicators

Constituent countries of the United Kingdom

Numbers (thousands), rates, percentages, mean age

Year and quarter	Population	Live births	Deaths	Dependency ratio: Children[1]	Dependency ratio: Elderly[2]	Live births: TFR[3]	Live births: Standardised mean age of mother at birth (years)[4]	Live births: Unstandardised mean age of mother at birth (years)[5]	Live births: Outside marriage as percentage of total live births	Age-standardised mortality rate[6]	Period expectation of life (in years) at birth[7]: Males	Period expectation of life (in years) at birth[7]: Females	Infant mortality rate[8]
United Kingdom													
1976	56,216.1	675.5	680.8	42.1	29.5	1.74	26.7	26.4	*9.0*	10,486	..	..	14.5
1981	56,357.5	730.7	658.0	37.1	29.7	1.82	27.0	26.8	*12.5*	9,506	70.8	76.8	11.2
1986	56,683.8	754.8	660.7	33.5	29.7	1.78	27.4	27.0	*20.4*	8,914	71.9	77.7	9.5
1991	57,438.7	792.3	646.2	33.2	30.0	1.82	27.7	27.7	*29.8*	8,168	73.2	78.7	7.4
1996	58,164.4	733.2	636.0	33.9	30.0	1.73	28.2	28.6	*35.5*	7,584	74.2	79.4	6.1
2001	59,113.5	669.1	602.3	32.6	29.8	1.63	28.6	29.2	*40.1*	6,807	75.6	80.4	5.5
2002	59,323.5	668.8	606.2	32.2	29.8	1.64	28.7	29.3	*40.6*	6,765	75.9	80.5	5.2
2003	59,557.3	695.6	612.0	31.8	29.9	1.71	28.8	29.4	*41.5*	6,758	76.2	80.7	5.3
2004	59,845.8	716.0	583.1	31.4	30.0	1.77	28.9	29.4	*42.3*	6,394	76.5	80.9	5.0
2005	60,238.4	722.5	582.7	31.0	30.0	1.78	29.1	29.5	*42.9*	6,268	76.9	81.3	5.1
2006	60,587.3	748.6	572.2	30.6	30.1	1.84	29.1	29.5	*43.7*	6,067	77.2	81.5	5.0
2007	60,975.4	772.2	574.7	30.4	30.5	1.90	29.3	29.5	*44.4*	5,966	..	..	4.8
England													
1976	46,659.9	550.4	560.3	41.4	29.7	1.70	26.5	26.4	*9.2*	10,271	..	..	14.2
1981	46,820.8	598.2	541.0	36.4	29.9	1.79	27.0	26.8	*12.9*	9,298	71.1	77.0	10.9
1986	47,187.6	623.6	544.5	33.1	29.8	1.76	27.4	27.0	*21.4*	8,725	72.2	77.9	9.5
1991	47,875.0	660.8	534.0	32.9	30.0	1.81	27.7	27.7	*30.1*	8,017	73.4	78.9	7.3
1996	48,519.1	614.2	524.0	33.7	30.0	1.73	28.2	28.7	*35.5*	7,414	74.5	79.6	6.1
2001	49,449.7	563.7	496.1	32.5	29.7	1.63	28.6	29.3	*39.6*	6,650	75.9	80.6	5.4
2002	49,652.3	565.7	499.1	32.1	29.7	1.65	28.7	29.4	*40.1*	6,603	76.1	80.7	5.2
2003	49,866.2	589.9	503.4	31.8	29.8	1.73	28.9	29.4	*40.9*	6,602	76.5	80.9	5.3
2004	50,110.7	607.2	479.2	31.4	29.8	1.78	29.0	29.5	*41.7*	6,232	76.8	81.1	5.0
2005	50,465.6	613.0	479.4	30.9	29.9	1.79	29.1	29.5	*42.3*	6,110	77.2	81.5	5.0
2006	50,762.9	635.7	470.3	30.6	29.9	1.86	29.2	29.5	*43.0*	5,916	77.5	81.7	5.0
2007	51,092.0	655.4	470.7	30.4	30.3	1.92	29.3	29.6	*43.8*	5,792	..	..	4.8
Wales													
1976	2,799.3	33.4	36.3	42.0	30.9	1.78	26.2	26.0	*8.6*	10,858	..	..	13.7
1981	2,813.5	35.8	35.0	37.6	31.6	1.87	26.7	26.6	*11.2*	9,846	70.4	76.4	12.6
1986	2,810.9	37.0	34.7	34.3	32.5	1.86	26.9	26.5	*21.1*	9,043	71.6	77.5	9.5
1991	2,873.0	38.1	34.1	34.4	33.5	1.88	27.1	27.0	*32.3*	8,149	73.1	78.8	6.6
1996	2,891.3	34.9	34.6	34.9	33.7	1.81	27.5	27.8	*41.2*	7,758	73.8	79.1	5.6
2001	2,910.2	30.6	33.0	33.7	33.6	1.66	27.8	28.3	*48.3*	7,017	75.3	80.0	5.4
2002	2,919.8	30.2	33.2	33.3	33.7	1.64	28.0	28.4	*49.7*	6,953	75.5	80.1	4.5
2003	2,931.1	31.4	33.7	32.8	33.8	1.73	28.1	28.5	*50.3*	6,984	75.8	80.3	4.3
2004	2,946.4	32.3	32.1	32.3	33.9	1.78	28.2	28.5	*51.3*	6,588	76.1	80.6	4.9
2005	2,953.6	32.6	32.1	31.8	34.1	1.81	28.4	28.5	*52.4*	6,442	76.6	80.9	4.1
2006	2,965.9	33.6	31.1	31.4	34.3	1.86	28.5	28.6	*53.0*	6,190	76.7	81.1	4.1
2007	2,980.0	34.4	32.1	31.0	34.9	1.90	28.6	28.6	*53.8*	6,307	..	..	5.3
Scotland													
1976	5,233.4	64.9	65.3	44.7	28.4	1.79	26.4	26.0	*9.3*	11,675	..	..	14.8
1981	5,180.2	69.1	63.8	38.2	28.4	1.84	26.8	26.3	*12.2*	10,849	69.1	75.3	11.3
1986	5,111.8	65.8	63.5	33.6	28.1	1.67	27.1	26.6	*20.6*	10,120	70.2	76.2	8.8
1991	5,083.3	67.0	61.0	32.4	28.9	1.69	27.5	27.4	*29.1*	9,216	71.4	77.1	7.1
1996	5,092.2	59.3	60.7	32.3	29.2	1.56	28.0	28.5	*36.0*	8,791	72.2	77.9	6.2
2001	5,064.2	52.5	57.4	30.8	30.0	1.49	28.5	29.2	*43.3*	7,930	73.3	78.8	5.5
2002	5,054.8	51.3	58.1	30.3	30.2	1.48	28.6	29.2	*44.0*	7,955	73.5	78.9	5.3
2003	5,057.4	52.4	58.5	29.9	30.3	1.54	28.7	29.3	*45.5*	7,921	73.8	79.1	5.1
2004	5,078.4	54.0	56.2	29.5	30.5	1.60	28.9	29.4	*46.7*	7,536	74.2	79.3	4.9
2005	5,094.8	54.4	55.7	29.1	30.6	1.62	29.0	29.5	*47.1*	7,349	74.6	79.6	5.2
2006	5,116.9	55.7	55.1	28.7	30.6	1.67	29.1	29.5	*47.7*	7,161	74.8	79.7	4.5
2007	5,144.2	57.8	56.0	28.4	31.0	1.73	29.2	29.4	*49.1*	7,150	..	..	4.7
Northern Ireland													
1976	1,523.5	26.4	17.0	56.1	25.3	2.68	27.8	27.4	*5.0*	11,746	..	..	18.3
1981	1,543.0	27.2	16.3	50.6	25.3	2.59	28.1	27.5	*7.0*	10,567	69.2	75.5	13.2
1986	1,573.5	28.0	16.1	46.1	25.5	2.45	28.1	27.5	*12.8*	10,071	70.9	77.1	13.2
1991	1,607.3	26.0	15.1	44.1	26.1	2.16	28.3	28.0	*20.3*	8,303	72.6	78.4	7.4
1996	1,661.8	24.4	15.2	41.8	25.5	1.95	28.7	28.8	*26.0*	7,742	73.8	79.2	5.8
2001	1,689.3	22.0	14.5	38.6	25.5	1.80	29.1	29.4	*32.5*	6,976	75.2	80.1	6.1
2002	1,696.6	21.4	14.6	37.9	25.7	1.77	29.2	29.5	*33.5*	6,930	75.6	80.4	4.7
2003	1,702.6	21.6	14.5	37.2	25.9	1.81	29.2	29.5	*34.4*	6,743	75.8	80.6	5.3
2004	1,710.3	22.3	14.4	36.4	26.2	1.87	29.4	29.7	*34.5*	6,609	76.0	80.8	5.5
2005	1,724.4	22.3	14.2	35.8	26.3	1.87	29.5	29.7	*36.3*	6,418	76.1	81.0	6.3
2006	1,741.6	23.3	14.5	35.3	26.4	1.94	29.6	29.7	*38.0*	6,397	76.2	81.2	5.1
2007	1,759.1	24.5	14.6	34.9	26.6	2.02	29.8	29.8	*37.9*	6,321	..	..	4.9

Note: Death figures for England and Wales represent the number of deaths registered in each year up to 1992, and the number of deaths occurring in each year from 1993 to 2005. Death figures for 2006 onwards relate to registrations.
Birth and death figures for England and also for Wales each exclude events for persons usually resident outside England and Wales (apart from life expectancy figures – where those occurring in England and Wales are assigned to England). These events are, however, included in the total for the United Kingdom. From 1981 births to non-resident mothers in Northern Ireland are excluded from the figures for Northern Ireland, and for the United Kingdom.

1 Percentage of children under 16 to working-age population (males 16–64 and females 16–59).
2 Percentage of males 65 and over and females 60 and over to working-age population (males 16–64 and females 16–59).
3 TFR (total fertility rate) is the number of children that would be born to a woman if current patterns of fertility persisted throughout her childbearing life. It is sometimes called the TPFR (total period fertility rate).
4 Standardised to take account of the age structure of the population.
5 Unstandardised and therefore takes no account of the age structure of the population.
6 Per million population. The age-standardised mortality rate makes allowances for changes in the age structure of the population. See Notes to tables.
7 All countries: figures for all years based on registered deaths. A minor methodological change was introduced for the 2006 figures to ensure consistency with population estimates of the very elderly for England and Wales. The effect on calculated life expectancies is marginal.
8 Deaths at age under one year per 1,000 live births.

Table 3.1 Live births: age of mother

England and Wales

Numbers (thousands), rates, mean age and TFRs

Year and quarter	Age of mother at birth							Mean age[1] (years)	Age of mother at birth							Mean age[2] (years)	TFR[3]
	All ages	Under 20	20–24	25–29	30–34	35–39	40 and over		All ages	Under 20	20–24	25–29	30–34	35–39	40 and over		
	Total live births (numbers)								Age-specific fertility rates[4]								
1961	811.3	59.8	249.8	248.5	152.3	77.5	23.3	27.6	89.2	37.3	172.6	176.9	103.1	48.1	15.0	27.4	2.77
1964(max)	876.0	76.7	276.1	270.7	153.5	75.4	23.6	27.2	92.9	42.5	181.6	187.3	107.7	49.8	13.7	27.3	2.93
1966	849.8	86.7	285.8	253.7	136.4	67.0	20.1	26.8	90.5	47.7	176.0	174.0	97.3	45.3	12.5	27.1	2.75
1971	783.2	82.6	285.7	247.2	109.6	45.2	12.7	26.2	83.5	50.6	152.9	153.2	77.1	32.8	8.7	26.6	2.37
1976	584.3	57.9	182.2	220.7	90.8	26.1	6.5	26.4	60.4	32.2	109.3	118.7	57.2	18.6	4.8	26.5	1.71
1977(min)	569.3	54.5	174.5	207.9	100.8	25.5	6.0	26.5	58.1	29.4	103.7	117.5	58.6	18.2	4.4	26.6	1.66
1981	634.5	56.6	194.5	215.8	126.6	34.2	6.9	26.8	61.3	28.1	105.3	129.1	68.6	21.7	4.9	27.0	1.79
1986	661.0	57.4	192.1	229.0	129.5	45.5	7.6	27.0	60.6	30.1	92.7	123.8	78.0	24.6	4.8	27.4	1.77
1991	699.2	52.4	173.4	248.7	161.3	53.6	9.8	27.7	63.6	33.0	89.3	119.4	86.7	32.1	5.3	27.7	1.82
1992	689.7	47.9	163.3	244.8	166.8	56.7	10.2	27.9	63.6	31.7	86.1	117.6	87.4	33.4	5.8	27.8	1.80
1993	673.5	45.1	152.0	236.0	171.1	58.8	10.5	28.1	62.7	30.9	82.5	114.4	87.4	34.1	6.2	27.9	1.76
1994	664.7	42.0	140.2	229.1	179.6	63.1	10.7	28.4	62.0	28.9	79.0	112.2	89.4	35.8	6.4	28.1	1.75
1995	648.1	41.9	130.7	217.4	181.2	65.5	11.3	28.5	60.5	28.5	76.4	108.4	88.3	36.3	6.8	28.2	1.72
1996	649.5	44.7	125.7	211.1	186.4	69.5	12.1	28.6	60.6	29.7	77.0	106.6	89.8	37.5	7.2	28.2	1.74
1997	643.1	46.4	118.6	202.8	187.5	74.9	12.9	28.8	60.0	30.2	76.0	104.3	89.8	39.4	7.6	28.3	1.73
1998	635.9	48.3	113.5	193.1	188.5	78.9	13.6	28.9	59.2	30.9	74.9	101.5	90.6	40.4	7.9	28.3	1.72
1999	621.9	48.4	110.7	181.9	185.3	81.3	14.3	29.0	57.8	30.9	73.0	98.3	89.6	40.6	8.1	28.4	1.70
2000	604.4	45.8	107.7	170.7	180.1	85.0	15.1	29.1	55.9	29.3	70.0	94.3	87.9	41.4	8.3	28.5	1.65
2001	594.6	44.2	108.8	159.9	178.9	86.5	16.3	29.2	54.7	28.0	69.0	91.7	88.0	41.5	8.8	28.6	1.63
2002	596.1	43.5	110.9	153.4	180.5	90.5	17.3	29.3	54.7	27.1	69.1	91.5	89.9	43.0	9.1	28.7	1.65
2003	621.5	44.2	116.6	156.9	187.2	97.4	19.1	29.4	56.8	26.9	71.3	95.8	94.9	46.4	9.8	28.8	1.73
2004	639.7	45.1	121.1	160.0	190.6	102.2	20.8	29.4	58.2	26.9	72.8	97.6	99.6	48.8	10.4	28.9	1.78
2005	645.8	44.8	122.1	164.3	188.2	104.1	22.2	29.5	58.3	26.3	71.6	97.9	100.7	50.3	10.8	29.1	1.79
2006	669.6	45.5	127.8	172.6	189.4	110.5	23.7	29.5	60.2	26.6	73.2	100.6	104.8	53.8	11.4	29.1	1.86
2007	690.0	44.8	130.8	182.6	191.1	115.4	25.4	29.5	62.0	26.0	73.5	104.0	110.2	56.9	12.0	29.3	1.92
2003 March	147.4	10.9	27.9	37.5	44.0	22.6	4.6	29.3	54.7	26.8	69.1	92.8	90.5	43.7	9.6	28.8	1.66
June	155.1	10.7	28.5	39.3	47.4	24.5	4.7	29.5	56.9	26.0	70.0	96.4	96.4	46.9	9.6	28.9	1.73
Sept	162.8	11.5	30.5	41.0	49.3	25.6	5.0	29.4	59.1	27.7	74.0	99.4	99.2	48.3	10.1	28.9	1.79
Dec	156.0	11.2	29.7	39.1	46.5	24.6	4.8	29.4	56.6	27.1	72.1	94.6	93.6	46.5	9.8	28.8	1.72
2004 March	155.2	11.0	29.3	38.7	46.6	24.7	4.9	29.4	56.8	26.5	70.8	95.0	97.9	47.4	9.8	28.9	1.74
June	157.4	10.7	29.3	39.4	47.7	25.2	5.0	29.5	57.6	25.7	70.9	96.6	100.4	48.5	10.1	29.0	1.76
Sept	165.4	11.7	31.4	41.6	49.0	26.3	5.4	29.4	59.9	27.7	75.0	101.0	102.0	50.1	10.7	28.9	1.83
Dec	161.7	11.6	31.1	40.3	47.2	26.0	5.5	29.4	58.5	27.6	74.3	97.7	98.2	49.4	10.9	28.9	1.79
2005 March	154.3	10.9	29.3	38.9	45.0	24.7	5.4	29.4	56.5	26.0	69.6	94.0	97.6	48.5	10.7	29.0	1.74
June	159.8	10.7	29.6	40.3	47.5	26.2	5.4	29.5	57.8	25.3	69.7	96.2	101.9	50.8	10.6	29.1	1.78
Sept	170.2	11.9	32.5	43.7	49.4	26.9	5.7	29.4	60.9	27.6	75.7	103.2	104.9	51.6	11.1	29.0	1.88
Dec	161.7	11.3	30.7	41.4	46.3	26.3	5.7	29.4	57.9	26.3	71.3	97.9	98.3	50.4	11.0	29.0	1.78
2006 March	159.5	11.1	30.5	40.7	45.3	26.3	5.6	29.5	58.2	26.3	70.9	96.1	101.6	52.0	11.0	29.1	1.79
June	166.2	11.4	31.2	42.9	47.6	27.1	5.9	29.5	60.0	26.6	71.8	100.4	105.7	53.0	11.3	29.1	1.85
Sept	174.9	12.0	33.5	45.6	49.0	28.9	6.0	29.4	62.4	27.7	76.1	105.4	107.5	55.9	11.4	29.1	1.93
Dec	169.0	11.1	32.6	43.5	47.5	28.1	6.2	29.5	60.3	25.7	74.0	100.5	104.3	54.4	11.8	29.2	1.86
2007 March	164.0	10.9	31.1	42.7	45.7	27.4	6.2	29.5	59.8	25.5	70.9	98.6	106.9	54.8	12.0	29.3	1.85
June	169.5	10.7	31.4	44.6	47.8	28.9	6.2	29.6	61.1	25.0	70.8	101.9	110.5	57.1	11.8	29.4	1.89
Sept	181.4	11.9	34.6	48.6	50.0	29.9	6.4	29.5	64.7	27.3	77.1	109.9	114.4	58.6	12.0	29.2	2.00
Dec	175.0	11.3	33.7	46.6	47.6	29.2	6.6	29.5	62.4	26.1	75.0	105.4	108.9	57.1	12.4	29.3	1.93
2008 March	173.8[p]	11.1[p]	33.5[p]	46.7[p]	47.2[p]	28.8[p]	6.4[p]	29.5[p]	62.6[p]	26.2[p]	73.7[p]	103.3[p]	110.7[p]	58.2[p]	12.3[p]	29.3[p]	1.92[p]
June	176.8[p]	11.0[p]	33.4[p]	48.3[p]	48.3[p]	29.2[p]	6.6[p]	29.5[p]	63.7[p]	25.9[p]	73.5[p]	107.0[p]	113.4[p]	58.9[p]	12.6[p]	29.4[p]	1.96[p]
Sept	182.0[p]	11.4[p]	35.0[p]	50.3[p]	49.2[p]	29.4[p]	6.7[p]	29.5[p]	64.9[p]	26.6[p]	76.1[p]	110.0[p]	114.2[p]	58.8[p]	12.8[p]	29.3[p]	1.99[p]

Note: The rates for women of all ages, under 20, and 40 and over are based upon the populations of women aged 15–44, 15–19, and 40–44 respectively.
Rates for 2008 are based on 2006-based population projections for 2008.

1 Unstandardised and therefore takes no account of the age structure of the population.

2 Standardised to take account of the age structure of the population. This measure is more appropriate for use when analysing trends or making comparisons between different geographies.

3 TFR (total fertility rate) is the number of children that would be born to a woman if current patterns of fertility persisted throughout her childbearing life. It is sometimes called the TPFR (total period fertility rate).

4 Births per 1,000 women in the age-group; all quarterly age-specific fertility rates are adjusted for days in the quarter. They are not adjusted for seasonality.

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Table 3.2 Live births outside marriage: age of mother and type of registration

England and Wales

Numbers (thousands), mean age and percentages

Year and quarter	Age of mother at birth: All ages	Under 20	20–24	25–29	30–34	35–39	40 and over	Mean age[1] (years)	Age of mother at birth: All ages	Under 20	20–24	25–29	30–34	35–39	40 and over	Registration[2]: Joint: Same[3] address	Joint: Different[3] address	Sole
	Live births outside marriage (numbers)								Percentage of total live births in age group							As a percentage of all births outside marriage		
1971	65.7	21.6	22.0	11.5	6.2	3.2	1.1	23.7	8.4	26.1	7.7	4.7	5.7	7.0	9.0		45.5	54.5
1976	53.8	19.8	16.6	9.7	4.7	2.3	0.7	23.3	9.2	34.2	9.1	4.4	5.2	8.6	10.1		51.0	49.0
1981	81.0	26.4	28.8	14.3	7.9	1.3	0.9	23.4	12.8	46.7	14.8	6.6	6.2	3.9	12.5		58.2	41.8
1986	141.3	39.6	54.1	27.7	13.1	5.7	1.1	23.8	21.4	69.0	28.2	12.1	10.1	12.6	14.7	46.6	19.6	33.8
1991	211.3	43.4	77.8	52.4	25.7	9.8	2.1	24.8	30.2	82.9	44.9	21.1	16.0	18.3	21.3	54.6	19.8	25.6
1992	215.2	40.1	77.1	55.9	28.9	10.9	2.3	25.2	31.2	83.7	47.2	22.8	17.3	19.3	22.9	55.4	20.7	23.9
1993	216.5	38.2	75.0	57.5	31.4	11.9	2.5	25.5	32.2	84.8	49.4	24.4	18.4	20.2	23.5	54.8	22.0	23.2
1994	215.5	35.9	71.0	58.5	34.0	13.4	2.7	25.8	32.4	85.5	50.6	25.5	18.9	21.2	25.2	57.5	19.8	22.7
1995	219.9	36.3	69.7	59.6	37.0	14.4	3.0	26.0	33.9	86.6	53.3	27.4	20.4	22.0	26.2	58.1	20.1	21.8
1996	232.7	39.3	71.1	62.3	40.5	16.2	3.2	26.1	35.8	88.0	56.5	29.5	21.7	23.4	26.7	58.1	19.9	21.9
1997	238.2	41.1	69.5	63.4	42.2	18.2	3.7	26.2	37.0	88.7	58.6	31.3	22.5	24.3	28.6	59.5	19.3	21.2
1998	240.6	43.0	67.8	62.4	43.9	19.6	3.9	26.3	37.8	89.1	59.7	32.3	23.3	24.8	29.0	60.9	18.3	20.8
1999	241.9	43.0	67.5	61.2	45.0	20.8	4.3	26.4	38.9	89.0	61.0	33.6	24.3	25.6	30.2	61.8	18.2	19.9
2000	238.6	41.1	67.5	59.1	43.9	22.3	4.7	26.5	39.5	89.7	62.6	34.6	24.4	26.2	31.0	62.7	18.2	19.2
2001	238.1	39.5	68.1	56.8	45.2	23.3	5.1	26.7	40.0	89.5	62.6	35.5	25.3	26.9	31.6	63.2	18.4	18.4
2002	242.0	38.9	70.2	55.8	46.4	25.1	5.6	26.8	40.6	89.5	63.3	36.4	25.7	27.7	32.2	63.7	18.5	17.8
2003	257.2	39.9	75.7	58.2	49.2	27.8	6.4	26.9	41.4	90.2	64.9	37.1	26.3	28.5	33.3	63.5	19.0	17.4
2004	269.7	41.0	79.8	61.4	50.7	29.7	7.1	27.0	42.2	91.0	65.9	38.4	26.6	29.0	34.0	63.6	19.6	16.8
2005	276.5	41.2	82.1	64.4	50.8	30.3	7.7	27.0	42.8	91.8	67.2	39.2	27.0	29.1	34.8	63.5	20.2	16.3
2006	291.4	42.3	87.7	69.3	51.4	32.2	8.4	27.0	43.5	93.0	68.6	40.1	27.1	29.2	35.5	63.7	20.8	15.6
2007	305.6	41.7	91.9	76.0	53.0	34.0	9.0	27.1	44.3	93.1	70.3	41.6	27.7	29.5	35.5	65.0	20.1	15.0
2002 March	58.0	9.4	16.7	13.6	10.9	6.0	1.3	26.8	40.5	89.4	63.0	36.4	25.4	27.7	31.5	63.2	18.5	18.3
June	58.3	9.3	16.6	13.5	11.4	6.1	1.4	26.8	39.6	89.4	62.2	35.6	25.0	27.2	31.7	64.2	18.2	17.7
Sept	63.4	10.2	18.4	14.6	12.3	6.5	1.5	26.8	40.9	89.3	63.8	36.6	26.1	27.9	32.7	63.9	18.5	17.5
Dec	62.3	10.0	18.4	14.1	11.9	6.5	1.5	26.8	41.4	89.7	64.1	36.9	26.4	28.0	32.8	63.3	18.9	17.8
2003 March	61.0	9.8	18.0	13.9	11.6	6.3	1.5	26.8	41.4	90.1	64.5	37.0	26.9	29.1	33.3	63.0	18.9	18.1
June	62.8	9.6	18.3	14.2	12.2	6.9	1.6	27.0	40.5	90.0	64.0	36.2	25.7	28.3	33.7	64.0	18.5	17.4
Sept	67.6	10.3	20.0	15.3	13.0	7.3	1.7	26.9	41.5	90.2	65.6	38.3	26.4	28.6	33.3	63.7	19.3	18.0
Dec	65.8	10.2	19.5	14.9	12.5	7.3	1.6	26.9	42.2	90.4	65.6	38.0	27.7	29.5	32.9	63.3	19.4	17.4
2004 March	65.2	10.1	19.3	14.8	12.5	7.0	1.7	26.9	42.0	91.2	65.8	38.2	26.8	28.2	34.3	63.1	19.4	17.4
June	65.2	9.8	19.1	14.9	12.5	7.3	1.7	27.0	41.4	91.0	65.1	37.7	26.2	28.8	34.5	63.9	19.5	16.6
Sept	70.2	10.7	20.7	16.1	13.0	7.9	1.8	27.0	42.4	91.2	66.1	38.6	26.5	30.0	33.5	63.7	19.7	16.6
Dec	69.1	10.6	20.7	15.7	12.7	7.5	1.9	26.9	42.7	90.6	66.6	39.0	27.0	29.0	33.9	63.6	19.8	16.6
2005 March	66.3	10.1	19.6	15.2	12.2	7.3	1.9	27.0	43.0	92.0	67.0	39.0	27.1	29.6	35.2	63.1	20.3	16.6
June	66.6	9.8	19.7	15.4	12.5	7.4	1.8	27.0	41.7	91.2	66.5	38.2	26.4	28.1	33.5	63.7	19.8	16.5
Sept	73.7	10.9	22.1	17.3	13.4	7.9	2.1	26.9	43.3	92.0	68.0	39.6	27.2	29.3	35.7	63.7	20.3	16.0
Dec	69.9	10.4	20.7	16.5	12.6	7.7	2.0	27.0	43.2	92.1	67.4	39.8	27.3	29.5	34.8	63.5	20.3	16.2
2006 March	68.7	10.3	20.8	16.0	12.0	7.6	1.9	26.9	43.1	93.1	68.1	39.4	26.5	28.9	34.4	63.1	20.9	16.0
June	71.4	10.5	21.2	16.9	12.8	7.8	2.1	27.0	43.0	92.6	68.0	39.4	26.9	28.8	35.0	63.7	20.6	15.6
Sept	76.8	11.1	23.1	18.6	13.4	8.4	2.2	27.0	43.9	92.8	69.0	40.7	27.3	29.2	36.9	64.1	20.5	15.4
Dec	74.5	10.3	22.6	17.8	13.2	8.4	2.2	27.1	44.1	93.3	69.2	40.9	27.8	29.8	35.7	63.6	21.0	15.4
2007 March	72.5	10.2	21.7	17.6	12.6	8.2	2.2	27.1	44.2	93.5	69.8	41.3	27.5	29.8	35.1	64.0	20.5	15.5
June	73.5	9.9	21.8	18.3	13.0	8.3	2.2	27.1	43.4	92.6	69.5	41.0	27.2	28.8	35.2	65.1	19.9	14.9
Sept	80.8	11.1	24.4	20.4	13.9	8.8	2.2	27.0	44.5	93.2	70.5	41.9	27.8	29.6	35.0	65.2	20.1	14.7
Dec	78.7	10.6	24.0	19.7	13.5	8.7	2.4	27.1	45.0	93.1	71.3	42.2	28.3	29.6	36.5	65.3	19.9	14.8
2008 March	78.5[p]	10.5[p]	23.8[p]	20.0[p]	13.3[p]	8.6[p]	2.3[p]	27.1[p]	45.2[p]	94.3[p]	71.1[p]	42.8[p]	28.3[p]	29.9[p]	35.8[p]	65.3[p]	20.0[p]	14.7[p]
June	79.3[p]	10.3[p]	23.9[p]	20.5[p]	13.7[p]	8.6[p]	2.4[p]	27.1[p]	44.9[p]	93.5[p]	71.4[p]	42.4[p]	28.4[p]	29.5[p]	35.9[p]	66.0[p]	19.8[p]	14.2[p]
Sept	82.8[p]	10.7[p]	25.3[p]	21.6[p]	13.9[p]	8.9[p]	2.4[p]	27.0[p]	45.5[p]	94.0[p]	72.3[p]	43.0[p]	28.2[p]	30.1[p]	36.2[p]	65.8[p]	20.5[p]	13.8[p]

1 Unstandardised and therefore takes no account of the age structure of the population.
2 Births outside marriage can be registered by both the mother and father (joint) or by the mother alone (sole).
3 Usual address(es) of parents.
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Table 4.1 Conceptions: age of woman at conception

England and Wales (residents)

Numbers (thousands) and rates; and percentage terminated by abortion

Year and quarter	Age of woman at conception								
	All ages	Under 16	Under 18	Under 20	20–24	25–29	30–34	35–39	40 and over
(a) numbers (thousands)									
1991	853.7	7.5	40.1	101.6	233.3	281.5	167.5	57.6	12.1
1996	816.9	8.9	43.5	94.9	179.8	252.6	200.0	75.5	14.1
1999	774.0	7.9	42.0	98.8	157.6	218.5	197.1	86.0	16.0
2000	767.0	8.1	41.3	97.7	159.0	209.3	195.3	88.7	17.0
2001	763.7	7.9	41.0	96.0	161.6	199.3	196.7	92.2	17.8
2002	787.0	7.9	42.0	97.1	167.8	199.4	204.3	98.9	19.6
2003	806.8	8.0	42.2	98.6	175.3	199.8	209.0	103.1	20.9
2004	826.8	7.6	42.2	101.3	181.3	205.1	209.6	106.8	22.8
2005	841.8	7.9	42.3	102.3	185.5	211.3	209.2	110.0	23.6
2006	870.0	7.8	41.8	103.1	191.2	222.2	212.4	115.4	25.5
2007[1,P]	894.1	8.2	42.9	106.1	198.3	234.2	211.1	117.8	26.5
2005 March	204.6	1.9	10.4	25.1	45.4	50.8	51.0	26.6	5.7
June	204.7	2.0	10.5	25.1	45.2	51.0	50.7	26.9	5.8
Sept	210.9	2.0	10.4	25.3	45.6	53.3	53.1	27.5	6.0
Dec	221.7	2.0	11.0	26.8	49.3	56.2	54.3	29.1	6.0
2006 March	214.0	1.8	10.2	25.4	47.5	54.2	52.4	28.3	6.2
June	212.6	2.1	10.6	25.7	46.9	53.8	51.4	28.3	6.5
Sept	215.1	2.0	10.0	24.7	46.3	55.3	53.6	28.9	6.4
Dec	228.2	2.0	11.0	27.3	50.6	58.9	55.1	29.9	6.5
2007 March[1,P]	221.6	2.0	10.8	26.7	49.4	57.0	52.7	29.3	6.5
June[1,P]	221.1	2.2	10.9	26.9	49.3	57.4	52.0	29.0	6.5
Sept[1,P]	222.2	2.0	10.3	25.6	48.5	58.8	52.9	29.7	6.7
Dec[1,P]	229.2	2.0	10.8	26.9	51.0	61.1	53.6	29.8	6.8
2008 March[4,P]	224.0	2.0	10.7	26.8	49.7	59.1	52.3	29.1	6.6
(b) rates (conceptions per thousand women in age group)									
1991	77.7	8.9	44.6	64.1	120.2	135.1	90.1	34.4	6.6
1996	76.2	9.5	46.3	63.2	110.1	127.6	96.3	40.7	8.4
1999	71.9	8.3	45.1	63.1	103.9	118.0	95.3	42.9	9.1
2000	70.9	8.3	43.9	62.5	103.2	115.7	95.3	43.2	9.4
2001	70.3	8.0	42.7	60.8	102.5	114.2	96.7	44.3	9.6
2002	72.2	7.9	42.9	60.6	104.4	119.0	101.7	47.0	10.3
2003	73.7	7.9	42.4	60.0	107.2	122.0	106.0	49.1	10.7
2004	75.2	7.5	41.8	60.3	109.0	125.1	109.6	51.0	11.4
2005	76.0	7.8	41.4	60.1	108.7	125.8	112.0	53.2	11.5
2006	78.3	7.8	40.9	60.2	109.5	129.5	117.5	56.3	12.3
2007[1,2,P]	80.3	8.3	41.9	61.5	111.4	133.4	121.7	58.1	12.6
2005 March	75.1	7.6	41.5	60.0	108.9	123.8	109.8	51.8	11.4
June	74.2	8.0	41.1	59.1	106.7	122.1	108.5	52.0	11.4
Sept	75.5	7.8	40.5	59.0	105.7	125.6	113.3	52.8	11.7
Dec	79.3	7.9	42.8	62.4	113.6	131.7	116.7	55.9	11.5
2006 March	78.2	7.1	40.4	60.3	111.2	129.2	116.2	55.7	12.2
June	76.7	8.2	41.4	60.3	108.1	126.1	113.6	55.3	12.5
Sept[3]	76.8	7.7	38.7	57.2	104.9	127.5	118.2	56.0	12.1
Dec[3]	81.4	8.1	42.8	63.0	114.1	135.1	122.7	58.2	12.3
2007 March[1,2,P]	80.8	8.1	42.9	62.9	113.4	132.8	121.2	58.4	12.6
June[1,2,P]	79.7	8.7	42.8	62.6	111.3	131.6	119.6	57.2	12.5
Sept[1,2,P]	79.2	8.2	40.1	59.0	107.8	132.2	121.1	58.3	12.6
Dec[1,2,P]	81.6	8.3	42.1	62.1	112.6	136.2	123.1	58.7	12.8
2008 March[2,4,P]	80.8	8.1	42.4	62.9	110.4	132.5	122.1	58.4	12.7
(c) percentage terminated by abortion									
1991	*19.4*	*51.1*	*39.9*	*34.5*	*22.2*	*13.4*	*13.7*	*22.0*	*41.6*
1996	*20.8*	*49.2*	*40.0*	*36.2*	*25.7*	*15.6*	*14.1*	*21.2*	*37.6*
1999	*22.6*	*52.6*	*43.0*	*38.6*	*28.5*	*17.5*	*14.7*	*21.2*	*37.0*
2000	*22.7*	*54.0*	*44.2*	*39.3*	*29.2*	*17.7*	*14.5*	*20.5*	*35.4*
2001	*23.2*	*55.8*	*45.7*	*40.4*	*29.7*	*18.4*	*14.6*	*20.4*	*34.6*
2002	*22.5*	*55.6*	*45.3*	*39.9*	*28.8*	*17.9*	*13.9*	*19.5*	*34.6*
2003	*22.5*	*57.4*	*45.7*	*40.2*	*29.0*	*17.9*	*13.6*	*18.9*	*34.7*
2004	*22.4*	*57.2*	*45.6*	*40.1*	*28.9*	*18.2*	*13.2*	*18.3*	*33.0*
2005	*22.2*	*57.1*	*46.3*	*40.3*	*28.6*	*18.0*	*13.2*	*17.7*	*32.8*
2006	*22.3*	*59.8*	*48.4*	*41.9*	*28.7*	*18.0*	*13.1*	*17.1*	*31.8*
2007[1,P]	*22.0*	*61.4*	*50.0*	*42.6*	*28.3*	*17.5*	*12.7*	*16.7*	*31.1*
2005 March	*22.5*	*57.5*	*47.3*	*41.1*	*29.2*	*18.1*	*13.1*	*18.0*	*32.6*
June	*22.7*	*57.0*	*45.8*	*40.3*	*28.9*	*18.6*	*13.9*	*17.8*	*33.8*
Sept	*21.4*	*56.2*	*45.3*	*39.0*	*27.5*	*17.5*	*12.6*	*17.2*	*32.1*
Dec	*22.2*	*57.5*	*46.9*	*40.6*	*28.7*	*17.8*	*13.1*	*17.7*	*32.7*
2006 March	*22.5*	*59.0*	*47.7*	*41.6*	*29.1*	*18.4*	*13.0*	*17.5*	*31.1*
June	*23.1*	*59.5*	*49.0*	*42.5*	*29.6*	*18.8*	*13.9*	*17.8*	*31.6*
Sept	*21.5*	*60.4*	*48.0*	*41.3*	*27.7*	*17.5*	*12.7*	*16.3*	*32.8*
Dec	*22.0*	*60.2*	*49.1*	*42.0*	*28.3*	*17.4*	*12.8*	*16.9*	*31.7*
2007 March[1,P]	*22.7*	*62.5*	*50.7*	*43.2*	*29.5*	*18.3*	*13.0*	*16.9*	*31.1*
June[1,P]	*22.5*	*61.9*	*50.3*	*43.1*	*28.6*	*18.0*	*12.8*	*17.0*	*31.5*
Sept[1,P]	*21.1*	*57.9*	*48.6*	*41.4*	*27.0*	*16.6*	*12.3*	*16.1*	*30.8*
Dec[1,P]	*21.9*	*63.3*	*50.4*	*42.7*	*28.1*	*17.2*	*12.6*	*16.8*	*30.8*
2008 March[4,P]	*22.6*	*62.1*	*50.6*	*43.9*	*29.0*	*17.9*	*13.1*	*16.8*	*31.2*

Note: Conception figures are estimates derived from birth registrations and abortion notifications.
Rates for women of all ages, under 16, under 18, under 20 and 40 and over are based on the population of women aged 15–44, 13–15, 15–17, 15–19 and 40–44 respectively.
For a quarterly analysis of conceptions to women under 18 for local authority areas see the ONS website, www.ons.gov.uk

1 Figures for conceptions in 2007 exclude maternities relating to births in 2008 where the mother's date of birth was not stated on the registration and could not be supplied from another source. See Explanatory notes in the 2007 Conceptions report in *Health Statistics Quarterly* No. 41.

2 Rates for both quarterly and annual 2007 conceptions and March quarter 2008 are calculated using the 2007 mid-year estimates.

3 Some of the quarterly rates for Sept and Dec 2006 have been amended. See In Brief in this volume.

4 Figures for conceptions by age for the March quarter of 2008 exclude maternities where the mother's age was not recorded.

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Table 4.2 Abortions: residents and non-residents; age and gestation (residents only)

England and Wales

Numbers (thousands) and rates; and percentages for gestation weeks

Year and quarter	All ages: All[1] women	All ages: Residents[1]	All ages: Non-[1] residents	All women (residents): Age group: Under 16	16–19	20–24	25–29	30–34	35–44	45 and over	Gestation weeks (percentages): Under 9	9–12	13–19	20 and over
	Numbers (thousands)										**Percentages**			
1971	126.8	94.6	32.2	2.3	18.2	24.5	17.3	14.2	15.9	0.5	*16.6*	*57.9*	*21.8*	*1.0*
1976	129.7	101.9	27.8	3.4	24.0	23.6	19.3	14.6	14.7	0.5	*24.8*	*55.8*	*15.0*	*1.1*
1981	162.5	128.6	33.9	3.5	31.4	34.3	21.9	18.7	17.6	0.6	*31.0*	*53.4*	*13.5*	*1.3*
1986	172.3	147.6	24.7	3.9	33.8	45.3	28.7	18.0	17.5	0.4	*33.4*	*53.8*	*11.5*	*1.4*
1991	179.5	167.4	12.1	3.2	31.1	52.7	38.6	23.4	17.9	0.4	*35.2*	*52.9*	*10.6*	*1.2*
1996	177.5	167.9	9.6	3.6	28.8	46.4	39.3	28.2	21.1	0.4	*40.0*	*48.7*	*10.1*	*1.3*
1997	179.7	170.1	9.6	3.4	29.9	45.0	40.2	28.9	22.3	0.5	*41.2*	*47.9*	*9.6*	*1.2*
1998	187.4	177.9	9.5	3.8	33.2	45.8	40.4	30.4	23.8	0.5	*41.4*	*47.6*	*9.7*	*1.3*
1999	183.2	173.7	9.5	3.6	32.8	45.0	38.5	29.1	24.1	0.5	*42.5*	*46.5*	*9.5*	*1.4*
2000	185.4	175.5	9.8	3.7	33.2	47.1	37.9	28.7	24.4	0.5	*43.3*	*45.0*	*10.3*	*1.5*
2001	186.3	176.4	9.9	3.7	33.4	48.3	36.5	28.8	25.2	0.5	*42.8*	*45.0*	*10.6*	*1.6*
2002	185.4	175.9	9.5	3.7	33.0	48.4	35.8	28.5	26.0	0.5	*42.2*	*45.2*	*11.0*	*1.6*
2003	190.7	181.6	9.1	4.0	34.2	51.1	36.0	28.7	26.9	0.5	*43.6*	*43.7*	*11.1*	*1.6*
2004	194.5	185.7	8.8	3.8	35.5	52.8	37.8	28.1	27.3	0.5	*46.2*	*41.5*	*10.8*	*1.6*
2005	194.4	186.4	7.9	3.8	35.3	53.3	38.3	27.8	27.2	0.6	*53.6*	*35.7*	*9.3*	*1.4*
2006	201.2	193.7	7.4	4.0	37.3	55.3	40.4	28.2	27.9	0.7	*54.9*	*34.3*	*9.2*	*1.5*
2007	205.6	198.5	7.1	4.4	39.6	57.0	41.7	27.3	27.9	0.7	*57.9*	*31.9*	*8.8*	*1.5*
2008	202.2	195.3	6.9	4.1	38.6	56.2	41.9	27.0	26.9	0.7	*61.6*	*28.7*	*8.2*	*1.5*
2004 March	51.1	48.7	2.4	1.0	9.4	13.9	9.8	7.5	7.0	0.1	*41.7*	*44.5*	*12.1*	*1.7*
June	48.9	46.6	2.3	1.0	8.9	13.3	9.5	6.9	6.9	0.1	*43.6*	*43.3*	*11.2*	*1.8*
Sept	48.4	46.3	2.1	1.0	8.9	13.0	9.4	7.0	6.9	0.1	*47.8*	*40.5*	*10.3*	*1.4*
Dec	46.1	44.2	1.9	1.0	8.4	12.6	9.1	6.6	6.5	0.1	*52.0*	*37.2*	*9.5*	*1.3*
2005 March	50.1	47.9	2.1	0.9	9.1	13.9	9.7	7.2	7.0	0.1	*47.2*	*40.4*	*11.0*	*1.4*
June	50.1	48.0	2.1	1.0	9.2	13.9	9.9	7.1	6.9	0.1	*53.8*	*35.6*	*9.2*	*1.4*
Sept	47.0	45.1	1.9	1.0	8.5	12.7	9.3	6.9	6.7	0.1	*56.5*	*33.6*	*8.5*	*1.3*
Dec	47.2	45.3	1.8	0.9	8.6	12.9	9.5	6.7	6.7	0.1	*57.2*	*32.9*	*8.3*	*1.5*
2006 March	52.4	50.4	2.0	1.0	9.8	14.6	10.4	7.2	7.3	0.2	*50.6*	*37.3*	*10.5*	*1.6*
June	51.3	49.3	2.0	1.0	9.4	14.2	10.3	7.2	7.1	0.2	*53.6*	*35.3*	*9.4*	*1.7*
Sept	49.8	47.9	1.8	1.0	9.2	13.6	10.0	7.0	6.9	0.2	*56.5*	*33.0*	*9.0*	*1.5*
Dec	47.7	46.0	1.6	1.0	8.8	13.0	9.6	6.7	6.7	0.1	*59.5*	*31.3*	*7.9*	*1.3*
2007 March	55.3	53.3	1.9	1.2	10.8	15.4	11.1	7.3	7.4	0.2	54.1	35.0	9.4	1.6
June	51.2	49.4	1.8	1.1	9.9	14.3	10.3	6.7	6.8	0.2	56.6	32.6	9.2	1.5
Sept	49.9	48.2	1.7	1.0	9.5	13.5	10.2	6.6	7.0	0.2	58.6	31.2	8.8	1.4
Dec	49.2	47.6	1.6	1.1	9.4	13.7	10.0	6.6	6.7	0.2	62.7	28.3	7.6	1.4
2008 March	53.4	51.6	1.8	1.1	10.5	14.8	10.8	7.0	7.2	0.2	58.4	31.0	9.0	1.6
June	52.5	50.8	1.8	1.1	10.1	14.6	10.9	6.9	7.0	0.2	60.8	29.5	8.3	1.4
Sept	48.7	47.0	1.7	1.0	9.2	13.4	10.3	6.9	6.5	0.2	62.9	27.6	8.0	1.4
Dec	47.5	45.9	1.6	1.0	8.8	13.3	9.9	6.5	6.2	0.2	64.8	26.2	7.6	1.4
Rates (per thousand women residents)	ASR[2] (women 15–44)	Crude rate[3] (women 15–44)												
1971	9.9	10.1	:	2.3	13.9	13.1	10.7	10.0	5.6	0.3				
1976	10.2	10.5	:	2.9	16.9	14.2	10.4	9.2	5.3	0.3				
1981	11.9	12.4	:	3.0	19.4	18.6	13.1	10.1	5.9	0.4				
1986	13.0	13.5	:	3.7	22.0	21.9	15.5	10.8	5.1	0.3				
1991	15.0	15.2	:	3.8	24.0	27.1	18.5	12.6	5.1	0.3				
1996	16.0	15.7	:	3.9	24.2	28.4	19.9	13.6	6.0	0.2				
1997	16.3	15.9	:	3.7	24.4	28.8	20.7	13.8	6.2	0.3				
1998	17.1	16.6	:	4.0	26.8	30.2	21.2	14.6	6.5	0.3				
1999	16.8	16.2	:	3.8	26.3	29.7	20.8	14.1	6.4	0.3				
2000	17.0	16.3	:	3.9	26.9	30.7	20.9	14.1	6.3	0.3				
2001	17.0	16.2	:	3.7	26.6	30.6	20.9	14.2	6.4	0.3				
2002	17.0	16.1	:	3.7	25.8	30.1	21.4	14.2	6.5	0.3				
2003	17.5	16.6	:	3.9	26.1	31.2	22.1	14.6	6.6	0.3				
2004	17.8	16.9	:	3.7	26.5	31.9	23.3	14.7	6.7	0.3				
2005	17.8	17.0	:	3.7	26.3	32.0	23.6	14.5	6.6	0.3				
2006	18.3	17.5	:	3.9	27.3	32.5	24.3	15.1	6.8	0.4				
2007	18.6	17.9	:	4.4	28.9	32.6	24.3	15.1	6.7	0.4				
2008	18.2	17.6	:	4.2	27.8	31.6	23.9	15.6	6.5	0.4				
2004 March	18.7	17.8	:	3.9	28.3	33.8	24.1	15.4	6.9	0.3				
June	17.9	17.0	:	3.8	26.7	32.3	23.3	14.4	6.7	0.3				
Sept	17.8	16.9	:	3.7	26.6	31.5	23.0	14.8	6.8	0.3				
Dec	17.0	16.2	:	3.5	25.0	30.4	22.3	14.2	6.3	0.3				
2005 March	18.4	17.5	:	3.7	27.0	33.5	23.8	15.2	6.8	0.3				
June	18.4	17.5	:	3.8	27.2	33.3	24.1	15.3	6.7	0.3				
Sept	17.3	16.4	:	3.8	25.2	30.5	22.6	14.8	6.5	0.3				
Dec	17.4	16.5	:	3.6	25.4	30.9	23.0	14.4	6.5	0.3				
2006 March	19.3	18.4	:	3.9	29.0	34.8	25.0	15.9	7.0	0.3				
June	18.9	18.0	:	3.9	27.8	33.8	24.7	16.0	6.8	0.4				
Sept	18.3	17.5	:	4.0	27.0	32.2	23.9	15.9	6.7	0.4				
Dec	17.5	16.8	:	4.0	25.9	30.8	22.8	15.3	6.5	0.3				
2007 March	20.0	19.2	:	4.7	31.4	35.3	25.6	16.7	7.2	0.4				
June	18.5	17.8	:	4.4	28.8	32.7	23.7	15.5	6.6	0.4				
Sept	18.0	17.4	:	4.2	27.7	30.8	23.3	15.4	6.8	0.4				
Dec	17.8	17.2	:	4.4	27.2	31.1	22.7	15.3	6.5	0.4				
2008 March	19.1	18.5	:	4.7	30.4	32.6	24.1	16.3	7.0	0.4				
June	18.7	18.2	:	4.4	29.3	32.1	24.1	16.0	6.9	0.3				
Sept	17.3	16.9	:	4.0	26.6	29.3	22.6	15.3	6.3	0.4				
Dec	16.9	16.4	:	4.1	25.4	29.0	21.5	15.2	6.1	0.3				

Notes: Rates for under 16 and 45 and over are based on female populations aged 13–15 and 45–49 respectively.
1 Includes cases with not stated age and/or gestation week.
2 Rates for all women residents age-standardised to the European population for ages 15–44.
3 Includes incomplete forms that have been returned to practitioners.

Table 5.1 Period expectation of life at birth and selected age

Constituent countries of the United Kingdom

Years

Year	Males								Year	Females							
	At birth	At age								At birth	At age						
		5	20	30	50	60	70	80			5	20	30	50	60	70	80
United Kingdom																	
1981	70.8	66.9	52.3	42.7	24.1	16.3	10.1	5.8	1981	76.8	72.7	57.9	48.2	29.2	20.8	13.3	7.5
1986	71.9	67.8	53.2	43.6	24.9	16.8	10.5	6.0	1986	77.7	73.4	58.6	48.8	29.8	21.2	13.8	7.8
1991	73.2	68.9	54.2	44.7	26.0	17.7	11.1	6.4	1991	78.7	74.3	59.5	49.7	30.6	21.9	14.3	8.2
1996	74.2	69.8	55.1	45.6	26.9	18.5	11.6	6.6	1996	79.4	74.9	60.1	50.3	31.2	22.3	14.5	8.3
2000	75.3	70.9	56.1	46.6	28.0	19.5	12.3	7.0	2000	80.1	75.6	60.8	51.0	31.9	23.0	15.0	8.6
2001	75.6	71.2	56.4	46.9	28.2	19.7	12.5	7.1	2001	80.4	75.8	61.0	51.2	32.1	23.2	15.1	8.7
2002	75.9	71.4	56.6	47.1	28.5	19.9	12.6	7.1	2002	80.5	75.9	61.1	51.3	32.2	23.3	15.2	8.7
2003	76.2	71.7	56.9	47.4	28.7	20.2	12.8	7.3	2003	80.7	76.1	61.3	51.5	32.4	23.4	15.3	8.7
2004	76.5	72.0	57.3	47.7	29.0	20.5	13.1	7.4	2004	80.9	76.4	61.5	51.7	32.6	23.6	15.5	8.8
2005	76.9	72.4	57.6	48.0	29.4	20.8	13.4	7.6	2005	81.3	76.7	61.9	52.0	32.9	23.9	15.8	9.0
2006	77.2	72.7	57.9	48.3	29.6	21.1	13.6	7.7	2006	81.5	76.9	62.0	52.2	33.1	24.1	15.9	9.1
England and Wales																	
1981	71.0	67.1	52.5	42.9	24.3	16.4	10.1	5.8	1981	77.0	72.9	58.1	48.3	29.4	20.9	13.4	7.5
1986	72.1	68.0	53.4	43.8	25.0	16.9	10.5	6.1	1986	77.9	73.6	58.8	49.0	30.0	21.4	13.9	7.9
1991	73.4	69.1	54.4	44.8	26.1	17.8	11.2	6.4	1991	78.9	74.5	59.7	49.9	30.8	22.0	14.4	8.3
1996	74.5	70.1	55.3	45.8	27.1	18.6	11.6	6.6	1996	79.6	75.1	60.2	50.4	31.3	22.5	14.6	8.4
2000	75.6	71.1	56.4	46.8	28.1	19.6	12.3	7.0	2000	80.3	75.8	60.9	51.1	32.0	23.1	15.1	8.6
2001	75.9	71.4	56.7	47.1	28.4	19.9	12.5	7.1	2001	80.5	76.0	61.2	51.3	32.2	23.3	15.2	8.7
2002	76.1	71.6	56.9	47.3	28.6	20.1	12.7	7.2	2002	80.7	76.1	61.3	51.5	32.3	23.4	15.3	8.7
2003	76.4	71.9	57.2	47.6	28.9	20.3	12.9	7.3	2003	80.9	76.3	61.5	51.7	32.5	23.6	15.4	8.8
2004	76.8	72.3	57.5	47.9	29.2	20.6	13.2	7.4	2004	81.1	76.6	61.7	51.9	32.7	23.8	15.6	8.9
2005	77.2	72.7	57.9	48.3	29.6	21.0	13.5	7.6	2005	81.5	76.9	62.0	52.2	33.1	24.1	15.9	9.1
2006	77.4	72.9	58.2	48.5	29.8	21.2	13.7	7.7	2006	81.7	77.1	62.2	52.4	33.2	24.3	16.0	9.2
England																	
1981	71.1	67.1	52.5	42.9	24.3	16.4	10.1	5.8	1981	77.0	72.9	58.2	48.4	29.4	20.9	13.4	7.5
1986	72.2	68.1	53.4	43.8	25.1	17.0	10.6	6.1	1986	77.9	73.6	58.8	49.0	30.0	21.4	13.9	7.9
1991	73.4	69.1	54.4	44.9	26.2	17.8	11.2	6.4	1991	78.9	74.5	59.7	49.9	30.8	22.0	14.4	8.3
1996	74.5	70.1	55.4	45.8	27.1	18.7	11.7	6.6	1996	79.6	75.1	60.3	50.4	31.3	22.5	14.6	8.4
2000	75.6	71.2	56.4	46.9	28.2	19.6	12.4	7.0	2000	80.3	75.8	61.0	51.2	32.0	23.1	15.1	8.6
2001	75.9	71.4	56.7	47.1	28.5	19.9	12.6	7.1	2001	80.6	76.0	61.2	51.4	32.2	23.3	15.2	8.7
2002	76.1	71.7	56.9	47.4	28.7	20.1	12.7	7.2	2002	80.7	76.1	61.3	51.5	32.4	23.4	15.3	8.7
2003	76.5	72.0	57.2	47.6	28.9	20.4	12.9	7.3	2003	80.9	76.4	61.5	51.7	32.6	23.6	15.4	8.8
2004	76.8	72.3	57.6	48.0	29.2	20.7	13.2	7.4	2004	81.1	76.6	61.7	51.9	32.8	23.8	15.6	8.9
2005	77.2	72.7	57.9	48.3	29.6	21.0	13.5	7.6	2005	81.5	76.9	62.1	52.3	33.1	24.1	15.9	9.1
2006	77.5	73.0	58.2	48.6	29.8	21.2	13.7	7.7	2006	81.7	77.1	62.3	52.4	33.3	24.3	16.0	9.2
Wales																	
1981	70.4	66.5	51.9	42.2	23.6	15.8	9.7	5.6	1981	76.4	72.3	57.5	47.7	28.9	20.5	13.1	7.4
1986	71.6	67.5	52.8	43.2	24.6	16.6	10.3	6.0	1986	77.5	73.3	58.5	48.7	29.7	21.1	13.7	7.8
1991	73.1	68.8	54.1	44.6	25.8	17.6	11.0	6.4	1991	78.8	74.3	59.5	49.7	30.6	21.8	14.3	8.3
1996	73.8	69.4	54.7	45.3	26.6	18.2	11.3	6.4	1996	79.1	74.6	59.7	49.9	30.9	22.1	14.4	8.3
2000	74.8	70.4	55.7	46.2	27.6	19.1	12.0	6.8	2000	79.7	75.2	60.4	50.6	31.5	22.6	14.7	8.4
2001	75.3	70.8	56.0	46.6	28.0	19.5	12.3	7.0	2001	80.0	75.4	60.6	50.8	31.7	22.8	14.9	8.5
2002	75.5	70.9	56.2	46.8	28.2	19.7	12.4	7.1	2002	80.1	75.5	60.7	50.9	31.8	22.9	15.0	8.6
2003	75.8	71.2	56.5	47.0	28.4	19.9	12.6	7.2	2003	80.3	75.7	60.9	51.1	32.0	23.1	15.1	8.6
2004	76.1	71.6	56.8	47.3	28.7	20.2	12.8	7.3	2004	80.6	76.0	61.1	51.3	32.2	23.3	15.2	8.7
2005	76.6	72.0	57.3	47.7	29.2	20.6	13.2	7.6	2005	80.9	76.3	61.5	51.6	32.6	23.7	15.5	8.9
2006	76.7	72.1	57.4	47.8	29.3	20.8	13.4	7.6	2006	81.1	76.5	61.6	51.8	32.7	23.8	15.7	9.0
Scotland																	
1981	69.1	65.2	50.6	41.1	22.9	15.4	9.6	5.5	1981	75.3	71.2	56.4	46.7	27.9	19.7	12.7	7.2
1986	70.2	66.0	51.4	41.9	23.5	15.8	9.9	5.7	1986	76.2	71.9	57.1	47.3	28.4	20.1	13.0	7.5
1991	71.4	67.1	52.5	43.0	24.6	16.6	10.4	6.1	1991	77.1	72.7	57.9	48.1	29.2	20.7	13.5	7.9
1996	72.2	67.8	53.1	43.7	25.3	17.3	10.9	6.3	1996	77.9	73.3	58.5	48.8	29.8	21.2	13.8	8.0
2000	73.1	68.6	53.9	44.6	26.3	18.2	11.5	6.6	2000	78.6	74.0	59.2	49.4	30.5	21.8	14.1	8.1
2001	73.3	68.8	54.2	44.8	26.6	18.4	11.7	6.8	2001	78.8	74.2	59.4	49.6	30.7	22.0	14.3	8.2
2002	73.5	69.0	54.3	45.0	26.7	18.6	11.8	6.8	2002	78.9	74.3	59.5	49.7	30.8	22.1	14.4	8.2
2003	73.8	69.3	54.6	45.2	27.0	18.8	12.0	6.9	2003	79.1	74.5	59.7	49.9	30.9	22.2	14.5	8.3
2004	74.2	69.7	55.0	45.6	27.3	19.1	12.2	7.0	2004	79.3	74.7	59.9	50.1	31.1	22.4	14.7	8.4
2005	74.6	70.1	55.4	45.9	27.7	19.4	12.5	7.2	2005	79.6	75.0	60.2	50.4	31.4	22.7	14.9	8.5
2006	74.8	70.3	55.5	46.1	27.9	19.6	12.6	7.2	2006	79.7	75.1	60.3	50.5	31.5	22.8	15.0	8.6
Northern Ireland																	
1981	69.2	65.4	50.9	41.5	23.2	15.6	9.7	5.8	1981	75.5	71.6	56.8	47.1	28.3	20.0	12.8	7.3
1986	70.9	66.8	52.2	42.7	24.2	16.4	10.4	6.2	1986	77.1	72.9	58.1	48.3	29.3	20.8	13.4	7.8
1991	72.6	68.2	53.6	44.1	25.5	17.3	11.0	6.4	1991	78.4	74.0	59.2	49.4	30.3	21.6	14.2	8.3
1996	73.8	69.4	54.7	45.3	26.6	18.2	11.4	6.6	1996	79.2	74.7	59.9	50.0	30.9	22.1	14.4	8.4
2000	74.8	70.4	55.7	46.2	27.6	19.1	11.9	6.6	2000	79.8	75.2	60.4	50.6	31.5	22.6	14.6	8.2
2001	75.2	70.7	56.1	46.6	27.9	19.4	12.3	6.9	2001	80.1	75.6	60.7	50.9	31.8	22.9	14.9	8.4
2002	75.6	71.1	56.4	46.9	28.2	19.7	12.4	7.0	2002	80.4	75.9	61.0	51.2	32.0	23.1	15.1	8.5
2003	75.8	71.4	56.7	47.1	28.4	19.9	12.6	7.2	2003	80.6	76.0	61.1	51.3	32.2	23.3	15.2	8.6
2004	76.0	71.6	56.9	47.4	28.7	20.2	12.8	7.3	2004	80.8	76.3	61.4	51.6	32.5	23.5	15.4	8.7
2005	76.1	71.6	57.0	47.5	28.9	20.4	13.0	7.3	2005	81.0	76.4	61.6	51.8	32.7	23.7	15.6	8.8
2006	76.2	71.7	57.1	47.6	29.1	20.6	13.1	7.3	2006	81.2	76.6	61.8	52.0	32.8	23.9	15.7	8.9

Note: All figures are based on a three-year period, so that for instance 2003 represents 2002–2004. The population estimates used to calculate these life expectancies are the latest available at time of publication of the 2005–2007 interim life tables (30 October 2008). All figures are based on death registrations. A minor methodological change was introduced for the 2006 figures to ensure consistency with population estimates of the very elderly for England and Wales. The effect on calculated life expectancies is marginal.

Table 6.1 Deaths: age and sex

England and Wales

Numbers (thousands) and rates

Year and quarter	All ages	Age group: Under 1[1]	1–4	5–9	10–14	15–19	20–24	25–34	35–44	45–54	55–64	65–74	75–84	85 and over
Numbers (thousands)														
Males														
1976	300.1	4.88	0.88	0.68	0.64	1.66	1.66	3.24	5.93	20.4	52.0	98.7	80.3	29.0
1981	289.0	4.12	0.65	0.45	0.57	1.73	1.58	3.18	5.54	16.9	46.9	92.2	86.8	28.5
1986	287.9	3.72	0.57	0.33	0.38	1.43	1.75	3.10	5.77	14.4	43.6	84.4	96.2	32.2
1991	277.6	2.97	0.55	0.34	0.35	1.21	1.76	3.69	6.16	13.3	34.9	77.2	95.8	39.3
1996	268.7	2.27	0.44	0.24	0.29	0.93	1.41	4.06	5.84	13.6	30.1	71.0	90.7	47.8
1999	264.3	2.08	0.41	0.22	0.28	0.90	1.27	3.85	5.93	13.6	28.7	64.3	90.4	52.3
2000	255.5	1.89	0.34	0.22	0.28	0.87	1.22	3.76	6.05	13.4	27.9	60.6	87.1	51.9
2001	252.4	1.81	0.32	0.19	0.28	0.88	1.27	3.63	6.07	13.3	27.5	57.5	87.0	52.7
2002	253.1	1.81	0.32	0.20	0.28	0.83	1.24	3.47	6.20	12.9	27.7	56.3	88.3	53.6
2003	253.9	1.81	0.31	0.19	0.24	0.81	1.23	3.26	6.32	12.7	28.2	55.1	89.6	54.0
2004	244.1	1.79	0.29	0.17	0.26	0.78	1.15	3.10	6.19	12.2	27.0	52.5	87.3	51.3
2005	243.3	1.87	0.28	0.16	0.25	0.75	1.11	2.89	6.14	12.1	27.3	51.0	84.8	54.7
2006	240.9	1.86	0.29	0.19	0.26	0.84	1.21	3.13	6.32	12.3	27.6	48.9	81.9	56.2
2007	240.8	1.88	0.34	0.18	0.23	0.80	1.22	3.14	6.26	11.9	27.5	47.8	80.6	58.9
Females														
1976	298.5	3.46	0.59	0.45	0.42	0.62	0.67	1.94	4.04	12.8	29.6	67.1	104.7	72.1
1981	288.9	2.90	0.53	0.30	0.37	0.65	0.64	1.82	3.74	10.5	27.2	62.8	103.6	73.9
1986	293.3	2.59	0.49	0.25	0.27	0.56	0.67	1.65	3.83	8.8	25.8	58.4	106.5	83.6
1991	292.5	2.19	0.44	0.25	0.22	0.46	0.64	1.73	3.70	8.4	21.3	54.2	103.3	95.7
1996	291.5	1.69	0.32	0.18	0.20	0.43	0.51	1.85	3.66	8.9	18.2	50.2	96.7	108.7
1999	291.8	1.55	0.30	0.17	0.22	0.39	0.47	1.67	3.79	9.0	18.0	45.1	93.9	117.2
2000	280.1	1.49	0.25	0.16	0.18	0.38	0.47	1.69	3.87	9.1	17.6	42.2	89.3	113.4
2001	277.9	1.43	0.27	0.19	0.18	0.38	0.47	1.59	3.77	8.9	17.6	40.5	88.8	113.9
2002	280.4	1.31	0.24	0.16	0.19	0.38	0.43	1.61	3.77	8.7	17.7	39.6	90.0	116.3
2003	284.4	1.50	0.28	0.15	0.19	0.35	0.46	1.57	3.86	8.5	18.0	39.0	92.7	117.9
2004	268.4	1.43	0.23	0.13	0.16	0.38	0.46	1.49	3.80	8.1	17.6	36.9	88.3	109.4
2005	269.1	1.37	0.22	0.13	0.18	0.38	0.48	1.48	3.81	8.2	17.8	36.0	86.4	113.1
2006	261.7	1.51	0.27	0.14	0.17	0.38	0.44	1.38	3.80	8.1	17.9	34.5	81.2	111.9
2007	263.3	1.46	0.24	0.12	0.19	0.36	0.45	1.36	3.79	8.1	18.2	33.9	79.4	115.8
Rates (deaths per 1,000 population in each age group)														
Males														
1976	12.5	16.2	0.65	0.34	0.31	0.88	0.96	0.92	2.09	6.97	19.6	50.3	116.4	243.2
1981	12.0	12.6	0.53	0.27	0.29	0.82	0.83	0.89	1.83	6.11	17.7	45.6	105.2	226.5
1986	11.8	11.0	0.44	0.21	0.23	0.72	0.83	0.88	1.68	5.27	16.6	42.8	101.2	215.4
1991	11.2	8.3	0.40	0.21	0.23	0.72	0.89	0.94	1.76	4.56	13.9	38.1	93.1	205.6
1996	10.7	6.8	0.32	0.14	0.18	0.60	0.85	1.01	1.67	4.06	11.9	34.5	85.0	198.8
1999	10.4	6.5	0.31	0.12	0.16	0.56	0.83	0.99	1.60	3.99	10.9	31.6	79.9	194.4
2000	10.0	6.1	0.26	0.13	0.16	0.54	0.79	0.98	1.59	3.92	10.4	29.7	75.9	187.5
2001	9.9	5.9	0.25	0.11	0.16	0.53	0.80	0.97	1.56	3.89	10.0	28.0	74.0	186.4
2002	9.8	5.9	0.25	0.12	0.16	0.49	0.77	0.94	1.57	3.86	9.7	27.2	73.5	187.7
2003	9.8	5.7	0.25	0.11	0.14	0.46	0.75	0.91	1.58	3.81	9.6	26.4	72.9	191.0
2004	9.4	5.5	0.23	0.10	0.15	0.44	0.67	0.87	1.53	3.67	9.0	25.0	69.9	176.0
2005	9.3	5.7	0.24	0.10	0.16	0.48	0.69	0.89	1.56	3.61	8.9	24.1	67.4	172.1
2006	9.1	5.4	0.23	0.12	0.15	0.46	0.67	0.89	1.55	3.58	8.8	23.2	64.7	163.4
2007	9.1	5.3	0.26	0.12	0.13	0.42	0.65	0.89	1.54	3.42	8.7	22.5	62.8	161.0
2005 March	10.5	6.2	0.26	0.09	0.17	0.46	0.71	0.88	1.56	3.83	9.7	26.6	77.3	201.2
June	9.1	5.5	0.25	0.10	0.18	0.42	0.59	0.83	1.57	3.53	8.8	23.4	65.8	162.9
Sept	8.3	5.3	0.20	0.09	0.12	0.40	0.63	0.85	1.44	3.46	8.3	22.2	59.6	146.0
Dec	9.3	5.6	0.21	0.11	0.11	0.39	0.62	0.73	1.46	3.54	8.8	24.0	66.9	176.9
2006 March	10.2	5.3	0.29	0.14	0.16	0.46	0.72	0.95	1.59	3.82	9.5	25.4	73.7	189.6
June	9.0	5.5	0.24	0.10	0.15	0.45	0.69	0.89	1.57	3.60	8.8	23.3	63.7	158.5
Sept	8.4	5.4	0.14	0.11	0.15	0.51	0.58	0.83	1.49	3.43	8.3	21.5	58.7	143.8
Dec	8.9	5.6	0.26	0.13	0.15	0.43	0.69	0.90	1.54	3.50	8.7	22.5	62.7	162.1
2007 March	10.0	5.3	0.29	0.12	0.14	0.47	0.65	0.92	1.55	3.68	9.2	24.4	69.9	184.3
June	8.8	5.7	0.26	0.12	0.14	0.44	0.65	0.90	1.50	3.39	8.6	22.1	60.7	152.3
Sept	8.3	5.1	0.22	0.09	0.13	0.40	0.61	0.88	1.49	3.18	8.2	20.7	57.1	140.5
Dec	9.3	5.2	0.28	0.13	0.12	0.43	0.69	0.88	1.61	3.45	9.0	22.8	63.6	167.3
2008[2] March[p]	9.7	5.4	0.21	0.12	0.11	0.36	0.60	0.84	1.56	3.65	9.0	23.3	65.7	178.3
June[p]	8.8	5.3	0.22	0.12	0.12	0.45	0.61	0.87	1.58	3.38	8.5	21.6	59.8	155.6
Sept[p]	8.2	5.1	0.18	0.13	0.10	0.44	0.70	0.88	1.56	3.27	8.1	20.3	55.0	139.5
Females														
1976	11.8	12.2	0.46	0.24	0.21	0.35	0.40	0.56	1.46	4.30	10.1	26.0	74.6	196.6
1981	11.3	9.4	0.46	0.19	0.19	0.32	0.35	0.52	1.26	3.80	9.5	24.1	66.2	178.2
1986	11.4	8.0	0.40	0.17	0.17	0.29	0.33	0.47	1.12	3.24	9.2	23.4	62.5	169.4
1991	11.2	6.4	0.33	0.16	0.15	0.29	0.33	0.44	1.05	2.87	8.2	21.8	58.7	161.6
1996	11.0	5.3	0.25	0.10	0.12	0.29	0.31	0.46	1.04	2.63	7.1	20.6	55.8	158.9
1999	11.0	5.1	0.24	0.10	0.13	0.25	0.31	0.43	1.01	2.61	6.7	19.2	53.4	162.6
2000	10.5	5.1	0.20	0.10	0.11	0.25	0.30	0.44	1.00	2.62	6.4	18.1	50.8	155.2
2001	10.4	4.9	0.22	0.12	0.11	0.24	0.30	0.42	0.96	2.57	6.3	17.4	50.1	155.0
2002	10.4	4.5	0.20	0.10	0.11	0.24	0.27	0.44	0.94	2.54	6.0	17.0	50.4	159.4
2003	10.6	4.9	0.24	0.10	0.12	0.21	0.28	0.43	0.95	2.51	5.9	16.7	51.3	165.6
2004	9.9	4.6	0.20	0.09	0.10	0.22	0.27	0.42	0.93	2.39	5.7	15.8	48.6	154.3
2005	9.9	4.4	0.19	0.09	0.11	0.22	0.27	0.40	0.90	2.38	5.6	15.4	48.1	152.7
2006	9.6	4.6	0.22	0.09	0.10	0.22	0.26	0.39	0.92	2.33	5.6	14.8	45.7	143.8
2007	9.6	4.3	0.19	0.08	0.12	0.21	0.25	0.39	0.92	2.27	5.6	14.5	44.9	143.6
2005 March	11.6	4.8	0.22	0.09	0.13	0.20	0.32	0.46	0.95	2.57	6.0	17.3	57.0	184.7
June	9.5	4.7	0.20	0.10	0.10	0.25	0.27	0.37	0.97	2.31	5.5	15.0	46.6	144.2
Sept	8.7	3.9	0.14	0.06	0.09	0.20	0.24	0.36	0.86	2.32	5.4	13.8	42.0	129.7
Dec	9.8	4.2	0.19	0.08	0.11	0.22	0.24	0.41	0.84	2.31	5.6	15.3	46.8	152.7
2006 March	11.0	5.0	0.25	0.07	0.08	0.24	0.30	0.39	1.01	2.42	6.1	16.4	52.5	172.0
June	9.4	4.6	0.22	0.10	0.14	0.19	0.24	0.42	0.88	2.35	5.5	14.7	45.4	140.9
Sept	8.6	4.3	0.19	0.10	0.08	0.23	0.22	0.36	0.91	2.27	5.3	13.7	41.1	124.3
Dec	9.2	4.5	0.24	0.09	0.12	0.23	0.25	0.41	0.89	2.27	5.5	14.3	43.7	138.7
2007 March	10.9	4.5	0.24	0.07	0.12	0.27	0.27	0.38	0.97	2.31	5.9	16.3	51.7	167.0
June	9.2	4.6	0.21	0.10	0.13	0.18	0.22	0.44	0.86	2.31	5.5	14.1	42.8	136.0
Sept	8.5	4.1	0.14	0.06	0.11	0.18	0.28	0.36	0.87	2.22	5.2	12.9	40.0	124.3
Dec	9.8	4.2	0.16	0.10	0.12	0.20	0.25	0.38	0.96	2.25	5.7	14.7	45.4	147.9
2008[2] March[p]	10.4	4.5	0.20	0.07	0.09	0.22	0.23	0.41	0.93	2.34	5.6	15.0	48.6	161.8
June[p]	9.3	3.6	0.20	0.11	0.10	0.16	0.27	0.41	0.92	2.29	5.4	13.7	42.7	140.5
Sept[p]	8.4	4.4	0.20	0.09	0.08	0.20	0.24	0.42	0.90	2.17	5.2	13.0	38.8	124.3

Note: Figures represent the numbers of deaths registered in each year up to 1992 and the numbers of deaths occurring in each year from 1993 to 2005. 2006, 2007 and provisional 2008 figures relate to registrations.

1 Rates per 1,000 live births.

2 Death rates for 2008 are based on the 2006-based population projections for 2008.

p provisional.

Table 6.2 Deaths: subnational

Government Office Regions of England

Rates

Year and quarter	North East	North West	Yorkshire and The Humber	East Midlands	West Midlands	East	London	South East	South West
Total deaths (deaths per 1,000 population of all ages)									
1996	11.7	11.7	11.2	10.7	10.7	10.3	9.4	10.7	11.7
1997	11.6	11.6	11.1	10.5	10.6	10.2	9.0	10.6	11.7
1998	11.9	11.7	11.2	10.8	10.6	10.2	8.8	10.4	11.4
1999	11.6	11.5	10.9	10.7	10.7	10.3	8.7	10.5	11.6
2000	10.8	10.7	10.3	10.0	10.3	9.9	8.2	9.8	11.3
2001	11.1	11.0	10.4	10.1	10.2	9.9	7.9	9.9	11.0
2002	11.2	11.0	10.5	10.2	10.3	10.0	7.8	10.0	11.1
2003	11.3	11.0	10.5	10.3	10.5	9.9	7.9	9.9	11.2
2004	11.0	10.5	10.1	9.7	9.9	9.5	7.3	9.4	10.4
2005	10.8	10.4	9.9	9.7	9.9	9.4	7.1	9.4	10.4
2006	10.5	10.2	9.6	9.6	9.7	9.2	6.8	9.2	10.1
2007	10.4	10.3	9.7	9.4	9.7	9.1	6.7	9.1	10.2
2006 March	11.6	11.4	10.7	10.8	11.1	10.6	7.8	10.8	11.6
June	10.6	10.2	9.5	9.5	9.6	9.2	6.7	8.9	9.9
Sept	9.4	9.3	8.8	8.7	8.8	8.3	6.2	8.1	9.1
Dec	10.6	9.9	9.5	9.5	9.4	9.0	6.5	8.8	9.9
2007 March	11.8	11.7	10.9	10.6	11.0	10.2	7.4	10.0	11.5
June	9.9	9.9	9.5	9.1	9.4	8.8	6.5	8.8	9.8
Sept	9.4	9.2	8.8	8.5	8.5	8.3	6.1	8.2	9.2
Dec	10.7	10.4	10.0	9.7	9.8	9.4	6.8	9.5	10.5
2008[1] March[p]	11.4	10.9	10.3	10.0	10.4	9.9	7.2	9.7	10.8
June[p]	9.9	9.7	9.5	9.2	9.3	9.0	6.4	8.8	9.8
Sept[p]	9.5	9.2	8.6	8.5	8.6	8.2	5.8	8.1	9.4
Infant mortality (deaths under 1 year per 1,000 live births)									
1996	6.2	6.3	6.5	6.3	6.8	5.3	6.3	5.3	5.5
1997	5.8	6.7	6.5	5.7	7.0	4.8	5.8	5.0	5.8
1998	5.0	6.3	6.9	5.6	6.5	5.0	6.0	4.4	4.8
1999	5.6	6.5	6.3	6.0	6.9	4.6	6.0	4.8	4.7
2000	6.5	6.2	7.3	5.4	6.8	4.4	5.4	4.4	4.7
2001	5.4	5.8	5.5	4.9	6.4	4.5	6.1	4.2	5.4
2002	4.8	5.4	6.1	5.6	6.6	4.3	5.5	4.5	4.3
2003	4.9	5.9	5.7	5.9	7.4	4.5	5.4	4.2	4.1
2004	4.6	5.4	5.8	4.9	6.3	4.2	5.2	3.9	4.5
2005	4.7	5.6	6.0	4.8	6.6	4.0	5.2	3.9	4.5
2006	5.4	5.6	5.7	5.4	6.4	4.1	4.9	4.1	4.0
2007	4.7	5.0	5.7	5.3	5.9	4.3	4.5	3.9	4.2
2006 March	5.4	6.0	5.4	5.9	6.6	3.8	5.5	4.3	4.2
June	6.4	5.5	6.1	5.0	7.0	4.3	4.6	4.2	3.7
Sept	5.4	5.2	4.8	5.3	6.7	3.6	4.8	4.2	3.6
Dec	4.5	5.7	6.6	5.5	5.3	4.6	4.7	3.9	4.7
2007 March	5.1	5.1	4.5	5.3	6.4	4.2	4.5	3.9	4.4
June	4.5	5.5	7.2	6.5	6.1	3.9	5.1	4.3	3.9
Sept	4.0	4.3	5.2	5.1	5.5	4.7	4.7	3.9	4.1
Dec	5.3	5.2	5.7	4.3	5.7	4.4	4.0	3.5	4.2
2008 March[p]	4.3	4.9	5.8	4.7	7.7	4.4	4.0	4.5	4.9
June[p]	4.4	4.9	4.6	4.9	6.7	4.3	3.9	3.7	3.1
Sept[p]	3.8	5.6	4.8	5.7	6.4	4.4	4.4	3.6	4.2
Neonatal mortality (deaths under 4 weeks per 1,000 live births)									
1996	4.1	4.0	4.2	4.2	4.9	3.5	4.4	3.5	3.8
1997	3.7	4.3	4.4	3.7	5.0	3.3	3.7	3.4	3.9
1998	3.1	4.1	4.5	3.7	4.8	3.4	4.1	2.9	3.3
1999	4.1	4.4	4.1	4.3	4.8	3.0	4.1	3.2	3.2
2000	4.4	4.3	5.0	4.1	5.0	3.0	3.7	3.1	3.0
2001	3.5	3.8	3.2	3.4	4.4	2.9	4.1	2.9	3.7
2002	3.2	3.6	4.0	4.0	4.8	2.9	3.6	2.9	3.1
2003	3.2	4.1	4.0	4.2	5.1	3.0	3.7	2.8	2.9
2004	2.8	3.6	3.8	3.5	4.7	2.9	3.6	2.8	3.2
2005	2.9	3.8	4.0	3.5	4.9	2.6	3.4	2.7	3.2
2006	3.8	3.8	4.0	4.0	4.6	2.9	3.4	2.8	2.9
2007	3.0	3.3	4.0	3.6	4.5	3.0	3.1	2.6	2.8
2006 March	4.1	3.8	4.0	4.2	4.6	2.7	3.4	2.9	3.2
June	4.0	3.8	4.2	3.9	5.1	3.2	3.3	2.7	2.4
Sept	3.4	3.5	3.3	3.9	5.4	2.5	3.5	2.9	2.6
Dec	3.7	4.1	4.7	4.0	3.2	3.1	3.6	2.5	3.6
2007 March	4.0	3.8	3.3	3.4	4.8	2.9	3.0	2.6	3.0
June	1.8	3.7	5.2	4.5	4.6	2.6	3.5	3.0	2.5
Sept	2.6	2.7	3.5	3.5	4.2	3.1	3.1	2.5	3.1
Dec	3.7	2.9	3.8	2.8	4.6	3.6	2.7	2.4	2.7
2008 March[p]	3.3	3.3	4.0	3.6	5.8	3.0	2.8	2.9	3.1
June[p]	2.7	3.4	2.7	3.3	4.3	2.7	2.6	2.7	2.5
Sept[p]	3.1	3.6	3.2	4.1	5.0	2.9	2.9	2.7	2.8
Perinatal mortality (stillbirths and deaths under 1 week per 1,000 total births)									
1996	9.2	8.6	8.3	8.7	10.2	7.5	9.6	7.8	7.5
1997	8.0	8.9	8.3	7.7	9.6	7.3	9.0	7.3	8.7
1998	8.2	8.7	9.2	8.0	9.3	7.4	9.0	6.8	7.3
1999	8.2	8.7	8.3	7.8	9.9	7.0	9.0	6.9	7.8
2000	8.5	8.6	9.6	7.8	9.6	7.1	9.0	6.6	6.6
2001	7.8	8.7	7.5	7.9	9.1	7.1	8.9	6.9	7.2
2002	8.1	8.5	9.0	8.5	10.0	7.5	9.3	6.9	6.8
2003	7.8	9.0	9.1	9.5	10.2	7.3	9.6	7.0	7.0
2004	7.9	8.4	9.4	8.1	9.6	7.6	9.3	7.0	7.2
2005	7.8	8.2	9.4	7.6	9.9	6.4	8.5	6.8	6.8
2006	8.0	8.3	8.5	8.4	9.2	6.7	8.8	7.0	6.6
2007[2]	7.2	7.9	8.8	7.3	9.1	7.0	8.4	6.7	6.4
2006 March	8.2	9.0	7.6	8.7	9.6	7.4	9.1	7.6	6.5
June	8.7	8.3	9.2	9.1	10.1	7.0	8.7	6.8	6.8
Sept	7.5	8.0	8.4	8.4	9.6	6.6	8.7	6.6	6.2
Dec	7.8	7.8	8.7	7.6	7.4	6.0	8.9	7.0	7.0
2007[2] March	7.5	8.5	7.8	6.8	9.5	7.6	8.5	6.8	6.8
June	6.8	7.4	9.2	8.6	9.8	6.7	9.1	7.1	6.5
Sept	7.4	7.3	8.9	7.1	7.8	7.0	8.6	6.1	6.4
Dec	7.2	8.5	9.1	6.7	9.5	6.8	7.6	6.7	6.1
2008 March[p]	6.5	8.2	9.2	7.9	11.5	6.1	7.7	6.6	6.3
June[p]	7.5	8.0	7.7	7.5	9.3	6.4	7.7	6.6	6.3
Sept[p]	8.2	7.9	6.7	6.5	8.3	6.3	7.4	5.9	7.2

Note: Figures represent the numbers of deaths occurring in each year with the exception of 2006, 2007 and provisional 2008 figures relate to registrations.
1 Total deaths rates for 2008 have been calculated using the mid-2007 population estimates published on 21 August 2008.
2 2007 Perinatal figures have been updated to include late receipt of stillbirth records.
p provisional.

Table 6.3 Deaths: selected causes (International Classification)[1] and sex

England and Wales

Number (thousands) and rate for all deaths and age-standardised rates per million population for selected causes

Year and quarter	All deaths		All causes (age - standardised rates per million population[2])	Malignant neoplasms									
	Number (thousands)	Crude rate per 100,000 population		Oesophagus	Stomach	Colon	Rectosigmoid junction, rectum, and anus	Trachea, bronchus and lung	Melanoma of skin	Other malignant neoplasms of skin	Breast	Cervix uteri	Ovary
			A00–R99 V01–Y89	(C15)	(C16)	(C18)	(C19–C21)	(C33–C34)	(C43)	(C44)	(C50)	(C53)	(C56)
Males													
1971	288.4	1,207	13,466	76	317	187	144	1,066	10	12	4	:	:
1981	289.0	1,196	12,189	90	251	181	135	1,028	17	9	3	:	:
1991	277.6	1,125	10,291	117	185	194	117	842	23	10	3	:	:
1998	264.7	1,064	8,981	129	132	169	95	643	26	8	3	:	:
1999	264.3	1,044	8,862	127	127	161	90	611	27	7	2	:	:
2000	255.5	1,005	8,437	128	118	158	89	592	28	7	2	:	:
2001	252.4	987	8,188	129	111	155	89	570	26	7	3	:	:
2002	253.1	985	8,081	131	110	151	90	559	27	8	3	:	:
2003	253.9	982	8,000	135	102	145	90	539	28	8	2	:	:
2004	244.1	939	7,554	129	95	143	92	521	30	9	2	:	:
2005	243.3	929	7,356	132	93	137	92	515	28	8	2	:	:
2006	240.9	913	7,123	131	83	132	90	509	31	7	2	:	:
2007	240.8	906	6,949	128	82	128	88	498	31	8	3	:	:
2006 March	66.5	1,023	7,931	131	82	134	98	522	32	7	2	:	:
June	59.4	904	7,058	132	82	128	87	504	30	7	2	:	:
Sept	55.5	835	6,536	128	81	133	85	497	29	7	1	:	:
Dec	59.5	894	6,985	131	86	133	91	515	31	8	3	:	:
2007 March	65.4	998	7,616	126	88	132	86	523	33	7	2	:	:
June	58.2	879	6,756	130	84	122	86	493	31	8	3	:	:
Sept	55.2	824	6,340	128	80	126	87	470	29	7	3	:	:
Dec	62.0	926	7,096	129	78	132	94	509	31	9	3	:	:
2008[3] March	64.4[p]	967[p]	7,288[p]	135[p]	80[p]	132[p]	88[p]	508[p]	29[p]	5[p]	1[p]	:	:
June	58.9[p]	884[p]	6,700[p]	125[p]	77[p]	130[p]	90[p]	476[p]	33[p]	8[p]	2[p]	:	:
Sept	55.3[p]	821[p]	6,252[p]	126[p]	79[p]	129[p]	91[p]	483[p]	30[p]	8[p]	2[p]	:	:
Females													
1971	278.9	1,104	8,189	40	149	176	79	183	14	6	379	83	126
1981	288.9	1,134	7,425	42	111	157	74	252	16	5	405	69	121
1991	292.5	1,122	6,410	50	74	146	61	300	18	4	401	54	118
1998	290.3	1,108	5,945	49	54	117	47	291	21	3	328	35	116
1999	291.8	1,097	5,929	52	51	115	46	289	20	3	319	33	111
2000	280.1	1,049	5,655	51	48	107	45	285	21	3	311	33	109
2001	277.9	1,038	5,543	48	46	103	45	283	20	3	308	31	112
2002	280.4	1,043	5,524	51	44	103	44	284	19	3	302	29	112
2003	284.4	1,055	5,575	50	42	98	46	285	20	3	293	27	108
2004	268.4	1,075	5,206	48	41	96	46	283	19	3	278	26	100
2005	269.4	990	5,188	48	39	96	46	290	21	3	284	26	102
2006	261.7	956	4,989	48	35	93	46	300	19	4	277	24	99
2007	263.3	957	4,921	47	35	92	48	300	21	4	267	24	96
2006 March	74.5	1,104	5,658	48	40	90	45	309	16	4	296	26	105
June	64.4	945	4,940	46	34	89	46	294	18	4	266	22	101
Sept	59.1	856	4,540	47	33	99	44	289	19	3	272	23	96
Dec	63.7	923	4,832	51	34	95	49	307	21	4	273	23	93
2007 March	74.0	1,091	5,523	50	35	92	49	315	22	4	284	25	95
June	62.8	916	4,757	48	31	88	45	296	22	4	267	22	97
Sept	58.8	847	4,408	40	37	91	47	285	21	3	251	22	97
Dec	67.7	976	5,007	51	37	96	49	306	20	4	269	25	94
2008[3] March	71.7[p]	1,042[p]	5,252[p]	50[p]	35[p]	86[p]	47[p]	301[p]	20[p]	3[p]	269[p]	24[p]	93[p]
June	63.8[p]	927[p]	4,758[p]	46[p]	36[p]	86[p]	47[p]	297[p]	21[p]	3[p]	259[p]	23[p]	91[p]
Sept	58.8[p]	844[p]	4,402[p]	43[p]	34[p]	94[p]	45[p]	299[p]	23[p]	3[p]	253[p]	23[p]	92[p]

Note: Figures represent the number of deaths registered in each year up to 1992 and the number of deaths occurring in each year from 1993 to 2005. The number of deaths for 2006 onwards relate to registrations.
The rates by cause of death in this table are based on final underlying cause. For further details see the Explanatory Notes in the 'Report: Death registrations in England and Wales, 2004: causes' in HSQ26.

Death rates from 2002 to 2005 have been updated to include the latest revised mid-year population estimates that take into account improved estimates of international migration.

1 The Ninth Revision of the International Classification of Diseases, 1975, came into operation in England and Wales on 1 January 1979. The Tenth Revision of the International Classification of Diseases, 1992, came into operation in England and Wales on 1 January 2001. The cause descriptions and codes relate to ICD-10. For changes to this table see 'In Brief', Health Statistics Quarterly 14.
2 Directly age-standardised to the European Standard Population. See Notes to Tables.
3 Death rates for 2008 are provisional and based on the 2006-based population projections for 2008.
p Provisional.

Table 6.3 continued **Deaths: selected causes (International Classification)[1] and sex**

England and Wales

Age-standardised rates[2] per million population for selected causes

Malignant neoplasms													
Prostate	Bladder	Leukaemia	Diabetes mellitus	Ischaemic heart disease	Cerebro vascular diseases	Pneumonia	Bronchitis, emphysema and other chronic obstructive pulmonary disease	Asthma	Gastric and duodenal ulcer	Diseases of the liver	Land transport accidents	Intentional self-harm and events of undetermined intent	Year and quarter
(C61)	(C67)	(C91–C95)	(E10–E14)	(I20–I25)	(I60–I69)	(J12–J18)	(J40–J44)	(J45–J46)	(K25–K27)	(K70–K76)	(V01–V89)	(X60–X84, Y10–Y34)	
													Males
198	124	74	82	3,801	1,541	920	944	21	107	41	209	124	1971
214	121	74	82	3,664	1,141	1,053	683	28	90	58	119	151	1981
304	121	77	131	2,984	940	391	606	31	73	76	125	160	1991
277	99	67	94	2,215	706	720	463	18	60	115	86	152	1998
272	93	67	94	2,095	673	770	474	18	64	119	86	151	1999
260	92	67	88	1,959	622	735	416	17	59	119	86	141	2000
274	93	70	94	1,872	690	388	403	16	55	139	86	134	2001
271	90	68	91	1,784	690	388	396	15	56	144	83	131	2002
273	87	71	91	1,703	662	408	411	14	53	157	84	129	2003
267	85	67	83	1,566	595	360	364	15	50	151	77	125	2004
256	80	67	79	1,470	555	353	368	12	46	156	75	118	2005
250	81	68	74	1,353	520	320	343	10	45	161	83	123	2006
247	81	66	71	1,280	481	303	337	11	39	162	79	119	2007
256	79	73	86	1,543	611	434	440	11	52	158	83	128	2006 March
249	81	63	75	1,351	506	318	351	10	48	164	90	117	June
241	83	67	66	1,210	454	242	271	11	41	158	77	112	Sept
252	80	69	71	1,312	509	287	312	8	41	164	82	134	Dec
252	83	66	77	1,442	541	395	433	11	44	178	84	115	2007 March
246	80	69	65	1,249	465	286	311	11	37	154	77	121	June
233	78	61	65	1,146	429	226	265	9	35	152	73	116	Sept
257	82	69	75	1,287	489	306	339	11	40	167	82	125	Dec
239[P]	75[P]	64[P]	75[P]	1,324[P]	514[P]	363[P]	412[P]	11[P]	47[P]	164[P]	67[P]	107[P]	2008 March
228[P]	78[P]	65[P]	72[P]	1,191[P]	453[P]	283[P]	321[P]	8[P]	39[P]	160[P]	70[P]	121[P]	June
238[P]	76[P]	61[P]	69[P]	1,069[P]	409[P]	225[P]	260[P]	8[P]	34[P]	161[P]	66[P]	137[P]	Sept
													Females
:	32	47	89	1,668	1,352	624	193	25	44	31	82	84	1971
:	35	47	66	1,601	1,012	740	155	30	57	43	41	81	1981
:	34	44	95	1,407	812	325	211	30	46	49	45	51	1991
:	32	41	65	1,055	645	546	226	22	41	64	28	43	1998
:	30	45	65	986	629	591	241	22	39	67	28	45	1999
:	31	39	62	907	577	546	216	20	41	68	24	45	2000
:	29	41	62	878	620	307	220	19	39	77	23	40	2001
:	30	43	65	843	616	316	224	20	37	79	24	41	2002
:	30	39	66	811	606	337	244	20	36	81	24	41	2003
:	28	39	60	736	548	296	214	17	35	78	20	38	2004
:	28	39	57	686	519	298	224	17	32	81	22	38	2005
:	29	36	54	629	478	261	213	16	29	87	24	39	2006
:	27	38	53	592	455	251	218	14	26	87	23	35	2007
:	29	42	60	733	551	371	283	19	37	87	25	40	2006 March
:	27	34	56	637	477	259	214	16	27	85	27	37	June
:	29	35	51	562	427	186	163	13	27	86	21	41	Sept
:	29	35	51	585	459	231	193	16	25	89	23	38	Dec
:	29	40	58	689	517	353	298	18	28	96	23	33	2007 March
:	29	36	49	569	439	228	204	14	27	86	27	31	June
:	24	34	50	520	399	178	156	12	24	80	22	35	Sept
:	26	41	56	591	464	249	217	14	26	86	20	39	Dec
:	29[P]	36[P]	54[P]	613[P]	487[P]	320[P]	262[P]	17[P]	28[P]	90[P]	20[P]	33[P]	2008[3] March
:	27[P]	36[P]	51[P]	547[P]	432[P]	237[P]	206[P]	14[P]	26[P]	85[P]	22[P]	39[P]	June
:	25[P]	36[P]	46[P]	499[P]	381[P]	170[P]	159[P]	11[P]	27[P]	78[P]	28[P]	40[P]	Sept

See notes opposite.

Report:

Gestation-specific infant mortality by social and biological factors among babies born in England and Wales in 2006

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Office for National Statistics

Key findings

- In 2006 7.6 per cent of live births were preterm (under 37 weeks gestational age), 88 per cent were born at term (37 to 41 weeks), and 4 per cent were born post term (42 weeks and above). The corresponding infant mortality rates were 41.0, 1.9, and 1.5 deaths per 1,000 live births respectively
- Among babies born at 37 weeks and above, the neonatal mortality rate of those weighing 1,500–2,499 grams at birth was 4.3 deaths per 1,000 live births as compared with 0.7 deaths per 1,000 live births among those weighing 2,500 grams and over
- Over half (53 per cent) of multiple births were born preterm as compared with only 6.2 per cent of singleton births
- The infant mortality rate of babies born at term/post term to mothers under age 20 was almost twice that of term/post term babies born to mothers aged 30–34 (2.7 deaths per 1,000 live births compared with 1.4 deaths per 1,000 live births)
- The percentage of babies born preterm varied by marital status/ registration type from 7.0 per cent among babies born inside marriage to 9.7 per cent among sole registrations
- Among babies born at 37 weeks and over, neonatal and total infant mortality in the routine and manual group was almost twice that in the managerial and professional group
- Infant mortality rates in the Pakistani and Caribbean groups were over twice the infant mortality of the White British group (9.8 deaths per 1,000 live births compared with 4.4 deaths per 1,000 live births)

Introduction

ONS publishes infant mortality statistics by social and biological factors annually using infant death records linked to their corresponding birth records.[1] Until recently it was not possible to publish these statistics by gestational age or ethnicity as this information is not recorded at birth registration in England and Wales (although gestational age is recorded for stillbirths). The opportunity to obtain these data items was provided by the introduction in 2002 of the NHS Numbers for Babies (NN4B) system for allocating NHS numbers at birth for all babies born in England, Wales and the Isle of Man.

As a result, gestation-specific infant mortality rates for England and Wales as a whole were published for the first time in 2007[2] and infant mortality and birth data by ethnic group were first published in 2008.[3,4] All these statistics used 2005 data. This report presents statistics on gestation-specific infant mortality by social and biological factors for all babies born in England and Wales in 2006. It includes, for the first time, gestation-specific infant mortality rates by ethnic group.

Box one

Definitions used in infant mortality statistics

Early neonatal	Before seven days after live birth
Late neonatal	At least seven but under 28 days after live birth
Postneonatal	At least 28 but under one year after live birth
Infant	Under a year after live birth

Mortality rates are presented as deaths per 1,000 live births.

Results

Infant mortality by single weeks gestational age

There were 3,292 deaths in the first year of life among babies born in 2006 in England and Wales, giving an infant mortality rate of 4.9 deaths per 1,000 live births (Table 1). Gestational age was known for 99.3 per cent of live births and 97.2 per cent of infant deaths. In 2006, 7.6 per cent of live births were born preterm (under 37 weeks gestational age), 88 per cent were born at term (37 to 41 weeks), and 4.3 per cent were born post term (42 weeks and above). The corresponding infant mortality rates were 41.0, 1.9, and 1.5 deaths per 1,000 live births respectively. Almost two-thirds of all infant deaths occurred to babies born preterm.

Infant mortality was highest at the very low gestational ages, 985 deaths per 1,000 live births among babies born before 22 weeks, and 937 deaths per 1,000 live births at 22 weeks. It then decreased with gestational age to 1.4 deaths per 1,000 live births among babies born at 40 weeks gestation. Even among term births infant mortality varied considerably from 3.7 deaths per 1,000 live births among babies born at 37 weeks, to 1.4 and 1.5 per 1,000 live births for babies born at 40 and 41 weeks respectively.

Infant mortality by gestational age and social and biological factors

Birthweight

The distribution of births by gestational age varied considerably by birthweight (Table 2). In the lower birthweight groups proportionately more babies were born at earlier gestational ages. Thus while the percentage born preterm was the same among babies weighing under 1,000 grams and 1,000–1,499 grams at birth, three-quarters of those weighing under 1,000 grams were born before 28 weeks of gestational age, compared with only 11 per cent of those weighing 1,000–1,499 grams. The relationship between birthweight and gestational age is reflected in the much higher neonatal mortality rate of 353 deaths per 1,000 live births among babies with birthweights under 1,000 grams compared with 41 per 1,000 among those weighing 1,000–1,499 grams. The neonatal mortality of babies weighing 2,500 grams and over at birth was very low (0.9 per 1,000 live births), reflecting the fact that only 3.0 per cent of births in this group were preterm. Within each birthweight group, neonatal mortality was inversely associated with gestational age. Similarly within each gestational age group neonatal mortality was inversely associated with birthweight. Even among babies who were born at 37 weeks and above, neonatal mortality varied considerably by birthweight; those weighing 1,500–2,499 grams at birth had a neonatal mortality rate of 4.3 deaths per 1,000 live births, compared with 0.7 deaths per 1,000 live births among babies weighing 2,500 grams and over. Babies of this weight born at 32–36 weeks of gestational age had a higher neonatal mortality rate of 4.2 deaths per 1,000 live births.

Multiplicity

Singleton and multiple live births have very different gestational age distributions (Table 3). Only 6.2 per cent of singleton births were born preterm as compared with over half of multiple births. Neonatal mortality

Table 1 **Live births and infant deaths by gestational age at birth, babies born in 2006**

England and Wales

Gestational age (weeks)	Numbers					Rates per 1,000 live births			
	Births	Deaths							
	Live births	Early Neonatal	Late Neonatal	Post-neonatal	Infant	Early Neonatal	Late Neonatal	Post-neonatal	Infant
All	669,465	1,750	555	987	3,292	2.6	0.8	1.5	4.9
Under 22 weeks and birthweight under 1,000g[1,3]	196	193	–	–	193	984.7	–	–	984.7
22 weeks	175	161	1	2	164	920.0	5.7	11.4	937.1
23	357	226	37	23	286	633.1	103.6	64.4	801.1
24	489	162	68	49	279	331.3	139.1	100.2	570.6
25	557	92	55	32	179	165.2	98.7	57.5	321.4
26	690	76	45	28	149	110.1	65.2	40.6	215.9
27	794	58	32	33	123	73.0	40.3	41.6	154.9
28	1,067	43	24	29	96	40.3	22.5	27.2	90.0
29	1,243	46	15	19	80	37.0	12.1	15.3	64.4
30	1,569	35	17	14	66	22.3	10.8	8.9	42.1
31	2,066	25	18	20	63	12.1	8.7	9.7	30.5
32	2,892	23	10	15	48	8.0	3.5	5.2	16.6
33	4,007	36	5	18	59	9.0	1.2	4.5	14.7
34	6,576	29	14	25	68	4.4	2.1	3.8	10.3
35	9,627	43	16	42	101	4.5	1.7	4.4	10.5
36	18,023	42	25	43	110	2.3	1.4	2.4	6.1
37	38,182	56	23	64	143	1.5	0.6	1.7	3.7
38	89,235	78	38	138	254	0.9	0.4	1.5	2.8
39	146,573	69	44	126	239	0.5	0.3	0.9	1.6
40	181,518	87	39	137	263	0.5	0.2	0.8	1.4
41	130,051	71	25	99	195	0.5	0.2	0.8	1.5
42 weeks and over	28,578	20	3	20	43	0.7	0.1	0.7	1.5
Gross inconsistency between birthweight and gestational age under 22 weeks[2,3]	102	38	–	–	38	372.5	–	–	372.5
Gestational age not stated	4,384	22	1	10	33	5.0	0.2	2.3	7.5
Not linked to NN4B record	514	19	–	1	20	37.0	–	1.9	38.9

1 This includes 14 babies weighing 500–999 grams, eleven of whom died. All babies of under 22 weeks gestational age and weighing under 500 grams died.
2 Under 22 weeks gestational age and birthweight 1,000 grams and over or not stated.
3 See reference 1 for discussion of data quality issues affecting births of under 22 weeks gestational age.

Table 7 Live births, neonatal and infant mortality by birthweight and gestational age at birth, babies born in 2006

England and Wales

Gestational age (weeks)	All	Birthweight (grams)				
		Under 1,000	1,000–1,499	1,500–2,499	2,500 and over	Not stated
Number of live births						
All	669,465	3,258	4,979	41,887	613,346	5,995
All with known gestational age[1]	664,465	3,231	4,915	41,511	609,202	5,606
Under 24	728	674	2	9	19	24
24–27	2,530	1,798	559	29	79	65
28–31	5,945	636	2,949	2,053	227	80
32–36	41,125	46	1,304	21,457	17,913	405
37 and over	614,137	77	101	17,963	590,964	5,032
Low gestational age inconsistent with birthweight[2]	102	–	5	10	67	20
Gestational age not stated	4,384	25	56	353	3,904	46
Not linked to NN4B record	514	2	3	13	173	323
Per cent under 37 weeks[3]	7.6	97.6	97.9	56.7	3.0	10.2
Number of neonatal deaths						
All	2,305	1,150	203	273	552	127
All with known gestational age[1]	2,225	1,136	198	265	531	95
Under 24	618	585	1	3	5	24
24–27	588	488	61	3	6	30
28–31	223	52	99	59	3	10
32–36	243	3	32	123	76	9
37 and over	553	8	5	77	441	22
Number of infant deaths						
All	3,292	1,329	280	464	1,080	139
All with known gestational age[1]	3,201	1,314	274	455	1,051	107
Under 24	643	610	1	3	5	24
24–27	730	606	83	5	6	30
28–31	305	83	133	73	4	12
32–36	386	5	51	214	104	12
37 and over	1,137	10	6	160	932	29
Neonatal mortality per 1,000 live births						
All	3.4	353.0	40.8	6.5	0.9	21.2
All with known gestational age[1]	3.3	351.6	40.3	6.4	0.9	16.9
Under 24	848.9	868.0	*500.0*	*333.3*	*263.2*	1,000.0
24–27	232.4	271.4	109.1	*103.4*	*75.9*	461.5
28–31	37.5	81.8	33.6	28.7	*13.2*	125.0
32–36	5.9	*65.2*	24.5	5.7	4.2	*22.2*
37 and over	0.9	*103.9*	*49.5*	4.3	0.7	4.4
Infant mortality per 1,000 live births						
All	4.9	407.9	56.2	11.1	1.8	23.2
All with known gestational age[1]	4.8	406.7	55.7	11.0	1.7	19.1
Under 24	883.2	905.0	*500.0*	*333.3*	*263.2*	1,000.0
24–27	288.5	337.0	148.5	*172.4*	*75.9*	461.5
28–31	51.3	130.5	45.1	35.6	*17.6*	150.0
32–36	9.4	*108.7*	39.1	10.0	5.8	29.6
37 and over	1.9	129.9	*59.4*	8.9	1.6	5.8

1 Excludes those with low gestational age inconsistent with birthweight, or gestational age not stated, or not linked to an NN4B record.
2 See data quality issues in Methods section.
3 Live births of known gestational age only.
Note: Rates based on less than 10 deaths are in italics

was 19.0 deaths per 1,000 among multiples and 3.0 deaths per 1,000 among singletons while total infant mortality was 22.9 deaths per 1,000 multiples and 4.4 deaths per 1,000 singletons. For babies born under 28 weeks gestation, mortality rates were broadly similar for multiple and singleton births. However among babies born at 28–31 weeks infant mortality of singletons exceeded that of multiples, and at 32–36 weeks the infant mortality rate for singletons was twice that of multiples. Among term/post term births, infant mortality was considerably higher for multiple than singleton births.

Mother's age

The percentage of babies born preterm was highest for mothers aged 40 and over (9.2 per cent) followed by those under age 20 (8.2 per cent) and aged 35–39 (8.1 per cent) (Table 4). Even among term/post term births, infant mortality varied by mother's age; the infant mortality rate of babies born to mothers under age 20 was almost twice that of babies born to mothers aged 30–34. Variation by mother's age appears to be especially pronounced for postneonatal mortality.

Marital status and type of registration

The percentage of babies born preterm ranged from 7.0 per cent among babies born inside marriage to 9.7 per cent among sole registrations (Table 5). While neonatal mortality among term/post term births was 0.9 deaths per 1,000 live births in all marital status/registration type groups, total infant mortality was much more variable. Babies born at term/post term inside marriage or outside marriage jointly registered by both parents giving the same address had infant mortality of 1.7 deaths per 1,000 live births compared with 2.1 deaths per 1,000 live births outside marriage jointly registered by both parents giving different addresses and 2.9 among sole registered births. This variation reflected mortality differences in the postneonatal period.

National Statistics Socio-economic Classification

Only births in marriage and those jointly registered by both parents are included in Table 6 as father's occupation is not recorded for sole registrations. The percentage of preterm births was lowest among babies with fathers in managerial and professional occupations. The 'Other' group (where father's occupation could not be coded to National Statistics Socio-economic Classification (NS-SEC) as no occupational information was available) had a higher percentage of preterm births than any of the three occupational groups.

For babies born at 24 weeks and above, gestation-specific neonatal and total infant mortality rates were almost always higher in the routine and manual group than either the intermediate or the managerial and professional groups. Among babies born at 37 weeks and over, both neonatal and total infant mortality in the routine and manual group were almost twice that in the managerial and professional group.

Ethnic group

Asian and Black ethnic groups accounted for 12 per cent of live births in England and Wales in 2006 and 18 per cent of infant deaths (Table 7). The percentage of babies born preterm was 6.7 per cent in the White Other group, between 7.5 and 7.7 per cent in the Bangladeshi, Indian, Pakistani and White British groups, 8.6 per cent in the African group and 10.8 per cent in the Caribbean group. Babies in the Pakistani and Caribbean groups had particularly high infant mortality, 9.8 deaths per 1,000 live births, over twice that of the White British group (4.4 deaths per 1,000 live births). Even considering only babies born at term/post term, infant mortality remained very high in the Pakistani group at 5.6 deaths per 1,000 live births but less so in the Caribbean group at 2.6 deaths per 1,000; this compared with 1.6 deaths per 1,000 live births among the White British.

Table 3 **Live births, neonatal and infant mortality by multiplicity and gestational age at birth, babies born in 2006**

England and Wales

Gestational age (weeks)	All	Multiplicity	
		Singleton	Multiple
Number of live births			
All	669,465	649,281	20,184
All with known gestational age[1]	664,465	644,441	20,024
Under 24	728	565	163
24–27	2,530	1,946	584
28–31	5,945	4,476	1,469
32–36	41,125	32,731	8,394
37 and over	614,137	604,723	9,414
Low gestational age inconsistent with birthweight[2]	102	95	7
Gestational age not stated	4,384	4,245	139
Not linked to NN4B record	514	500	14
Per cent under 37 weeks[3]	7.6	6.2	53.0
Number of neonatal deaths			
All	2,305	1,922	383
All with known gestational age[1]	2,225	1,850	375
Under 24	618	480	138
24–27	588	448	140
28–31	223	174	49
32–36	243	217	26
37 and over	553	531	22
Number of infant deaths			
All	3,292	2,829	463
All with known gestational age[1]	3,201	2,747	454
Under 24	643	498	145
24–27	730	558	172
28–31	305	239	66
32–36	386	344	42
37 and over	1,137	1,108	29
Neonatal mortality per 1,000 live births			
All	3.4	3.0	19.0
All with known gestational age[1]	3.3	2.9	18.7
Under 24	848.9	849.6	846.6
24–27	232.4	230.2	239.7
28–31	37.5	38.9	33.4
32–36	5.9	6.6	3.1
37 and over	0.9	0.9	2.3
Infant mortality per 1,000 live births			
All	4.9	4.4	22.9
All with known gestational age[1]	4.8	4.3	22.7
Under 24	883.2	881.4	889.6
24–27	288.5	286.7	294.5
28–31	51.3	53.4	44.9
32–36	9.4	10.5	5.0
37 and over	1.9	1.8	3.1

1 Excludes those with low gestational age inconsistent with birthweight, or gestational age not stated, or not linked to an NN4B record.
2 See data quality issues in Methods section.
3 Live births of known gestational age only.
Note: Rates based on less than 10 deaths are in italics

Table 4 Live births, neonatal and infant mortality by mother's age and gestational age at birth, babies born in 2006

England and Wales

Gestational age (weeks)	All	Mother's age					
		Under 20	20–24	25–29	30–34	35–39	40 and over
Number of live births							
All	669,465	45,494	127,807	172,627	189,360	110,465	23,712
All with known gestational age[1]	664,465	44,955	126,536	171,328	188,223	109,831	23,592
Under 24	728	60	138	191	203	104	32
24–27	2,530	221	508	646	631	413	111
28–31	5,945	466	1,120	1,425	1,558	1,128	248
32–36	41,125	2,943	7,672	10,103	11,327	7,289	1,791
37 and over	614,137	41,265	117,098	158,963	174,504	100,897	21,410
Low gestational age inconsistent with birthweight[2]	102	8	21	25	24	16	8
Gestational age not stated	4,384	498	1,151	1,129	987	525	94
Not linked to NN4B record	514	33	99	145	126	93	18
Per cent under 37 weeks[3]	7.6	8.2	7.5	7.2	7.3	8.1	9.2
Number of neonatal deaths							
All	2,305	191	474	624	573	338	105
All with known gestational age[1]	2,225	187	457	598	552	330	101
Under 24	618	48	119	167	172	84	28
24–27	588	62	126	156	130	89	25
28–31	223	20	44	58	58	37	6
32–36	243	18	47	67	64	32	15
37 and over	553	39	121	150	128	88	27
Number of infant deaths							
All	3,292	304	718	865	778	486	141
All with known gestational age[1]	3,201	298	699	836	754	477	137
Under 24	643	49	129	174	177	85	29
24–27	730	81	149	183	165	121	31
28–31	305	24	64	81	75	54	7
32–36	386	33	86	104	91	51	21
37 and over	1,137	111	271	294	246	166	49
Neonatal mortality per 1,000 live births							
All	3.4	4.2	3.7	3.6	3.0	3.1	4.4
All with known gestational age[1]	3.3	4.2	3.6	3.5	2.9	3.0	4.3
Under 24	848.9	800.0	862.3	874.3	847.3	807.7	875.0
24–27	232.4	280.5	248.0	241.5	206.0	215.5	225.2
28–31	37.5	42.9	39.3	40.7	37.2	32.8	*24.2*
32–36	5.9	6.1	6.1	6.6	5.7	4.4	8.4
37 and over	0.9	0.9	1.0	0.9	0.7	0.9	1.3
Infant mortality per 1,000 live births							
All	4.9	6.7	5.6	5.0	4.1	4.4	5.9
All with known gestational age[1]	4.8	6.6	5.5	4.9	4.0	4.3	5.8
Under 24	883.2	816.7	934.8	911.0	871.9	817.3	906.3
24–27	288.5	366.5	293.3	283.3	261.5	293.0	279.3
28–31	51.3	51.5	57.1	56.8	48.1	47.9	*28.2*
32–36	9.4	11.2	11.2	10.3	8.0	7.0	11.7
37 and over	1.9	2.7	2.3	1.8	1.4	1.6	2.3

1 Excludes those with low gestational age inconsistent with birthweight, or gestational age not stated, or not linked to an NN4B record.
2 See data quality issues in Methods section.
3 Live birth of known gestational age.
Note: Rates based on less than 10 deaths are in italics.

Table 5 **Live births, neonatal and infant mortality by marital status/type of registration and gestational age at birth, babies born in 2006**

England and Wales

Gestational age (weeks)	All	Marital status/type of registration			
		Inside marriage	Joint registration/ same address	Joint registration/ different address	Sole registration
Number of live births					
All	669,465	378,141	185,436	60,441	45,447
All with known gestational age[1]	664,465	375,790	184,016	59,750	44,909
Under 24	728	337	220	98	73
24–27	2,530	1,199	742	340	249
28–31	5,945	2,952	1,692	731	570
32–36	41,125	21,730	11,596	4,340	3,459
37 and over	614,137	349,572	169,766	54,241	40,558
Low gestational age inconsistent with birthweight[2]	102	61	20	7	14
Gestational age not stated	4,384	2,006	1,275	631	472
Not linked to NN4B record	514	284	125	53	52
Per cent under 37 weeks[3]	7.6	7.0	7.7	9.2	9.7
Number of neonatal deaths					
All	2,305	1,173	693	253	186
All with known gestational age[1]	2,225	1,130	667	250	178
Under 24	618	283	189	84	62
24–27	588	268	195	79	46
28–31	223	121	61	22	19
32–36	243	150	62	17	14
37 and over	553	308	160	48	37
Number of infant deaths					
All	3,292	1,660	937	377	318
All with known gestational age[1]	3,201	1,614	907	371	309
Under 24	643	296	195	86	66
24–27	730	331	232	104	63
28–31	305	164	80	34	27
32–36	386	213	103	35	35
37 and over	1,137	610	297	112	118
Neonatal mortality per 1,000 live births					
All	3.4	3.1	3.7	4.2	4.1
All with known gestational age[1]	3.3	3.0	3.6	4.2	4.0
Under 24	848.9	839.8	859.1	857.1	849.3
24–27	232.4	223.5	262.8	232.4	184.7
28–31	37.5	41.0	36.1	30.1	33.3
32–36	5.9	6.9	5.3	3.9	4.0
37 and over	0.9	0.9	0.9	0.9	0.9
Infant mortality per 1,000 live births					
All	4.9	4.4	5.1	6.2	7.0
All with known gestational age[1]	4.8	4.3	4.9	6.2	6.9
Under 24	883.2	878.3	886.4	877.6	904.1
24–27	288.5	276.1	312.7	305.9	253.0
28–31	51.3	55.6	47.3	46.5	47.4
32–36	9.4	9.8	8.9	8.1	10.1
37 and over	1.9	1.7	1.7	2.1	2.9

1 Excludes those with low gestational age inconsistent with birthweight, or gestational age not stated, or not linked to an NN4B record.
2 See data quality issues in Methods section.
3 Live births of known gestational age only.
Note: Rates based on less than 10 deaths are in italics

Table 6 Live births,[1] neonatal and infant mortality by NS-SEC (based on father's occupation[2]) and gestational age at birth, babies born in 2006

England and Wales

Gestational age (weeks)	National Statistics Socio-economic Classification				
	All[3]	Managerial and professional	Intermediate	Routine and manual	Other[4]
Number of live births					
All	624,018	23,573	12,123	22,952	3,795
All with known gestational age[5]	619,556	23,441	12,049	22,747	3,739
Under 24	655	24	10	30	8
24–27	2,281	63	44	107	19
28–31	5,375	189	112	235	44
32–36	37,666	1,304	777	1,426	239
37 and over	573,579	21,861	11,106	20,949	3,429
Low gestational age inconsistent with birthweight[6]	88	4	2	3	–
Gestational age not stated	3,912	110	65	181	50
Not linked to NN4B record	462	18	7	21	6
Per cent under 37 weeks[7]	7.4	6.7	7.8	7.9	8.3
Number of neonatal deaths					
All	2,119	561	388	941	206
All with known gestational age[5]	2,047	545	375	906	199
Under 24	556	154	105	234	59
24–27	542	134	97	251	56
28–31	204	58	39	80	23
32–36	229	60	39	106	18
37 and over	516	139	95	235	43
Number of infant deaths					
All	2,974	753	540	1,311	322
All with known gestational age[5]	2,892	735	527	1,269	314
Under 24	577	161	106	244	61
24–27	667	165	117	311	67
28–31	278	75	50	115	32
32–36	351	88	61	153	37
37 and over	1,019	246	193	446	117
Neonatal mortality per 1,000 live births					
All	3.4	2.4	3.2	4.1	5.4
All with known gestational age[5]	3.3	23.2	31.1	39.8	53.2
Under 24	848.9	641.7	1,050.0	780.0	737.5
24–27	237.6	212.7	220.5	234.6	294.7
28–31	38.0	30.7	34.8	34.0	52.3
32–36	6.1	4.6	5.0	7.4	7.5
37 and over	0.9	0.6	0.9	1.1	1.3
Infant mortality per 1,000 live births					
All	4.8	3.2	4.5	5.7	8.5
All with known gestational age[5]	4.7	3.1	4.4	5.6	8.4
Under 24	880.9	670.8	1,060.0	813.3	762.5
24–27	292.4	261.9	265.9	290.7	352.6
28–31	51.7	39.7	44.6	48.9	72.7
32–36	9.3	6.7	7.9	10.7	15.5
37 and over	1.8	1.1	1.7	2.1	3.4

1 Figures for live births in NS-SEC groups are a 10 per cent sample coded for father's occupation.
2 For births, father's occupation recorded at birth is used; for deaths, father's occupation recorded at infant death is used.
3 Inside marriage and outside marriage/joint registration only, including cases where father's occupation was not stated.
4 Students; occupations inadquately described; occupations not classifiable for other reasons; never worked and long-term unemployed.
5 Excludes those with low gestational age inconsistent with birthweight, or gestational age not stated, or not linked to an NN4B record.
6 See data quality issues in Methods section.
7 Live births of known gestational age only.
Note: Rates based on less than 10 deaths are in italics

Table 7 **Live births, neonatal and infant mortality by ethnic group and gestational age at birth, babies born in 2006**

England and Wales

Gestational age (weeks)	All[1]	Asian, Asian British			Black, Black British		White		All Others[2]	Not stated
		Bangladeshi	Indian	Pakistani	African	Caribbean	White British	White Other		
Number of live births										
All	669,465	8,943	16,934	25,019	21,328	7,434	430,417	37,553	54,559	66,764
All with known gestational age[3]	664,465	8,903	16,869	24,732	21,241	7,414	427,443	37,472	54,296	66,095
Under 24	728	7	10	34	66	31	365	27	86	102
24–27	2,530	16	60	108	175	67	1,450	114	257	283
28–31	5,945	62	153	230	264	115	3,783	262	527	549
32–36	41,125	591	1,060	1,525	1,320	589	26,548	2,108	3,409	3,975
37 and over	614,137	8,227	15,586	22,835	19,416	6,612	395,297	34,961	50,017	61,186
Low gestational age inconsistent with birthweight[4]	102	–	4	5	4	1	59	6	7	16
Gestational age not stated	4,384	40	61	282	83	19	2,915	75	256	653
Not linked to NN4B record	514	–	–	–	–	–	–	–	–	–
Per cent under 37 weeks[5]	7.6	7.6	7.6	7.7	8.6	10.8	7.5	6.7	7.9	7.4
Number of neonatal deaths										
All	2,305	30	55	155	125	55	1,296	94	219	257
All with known gestational age[3]	2,225	30	52	150	124	54	1,265	92	216	242
Under 24	618	6	8	29	53	25	312	22	77	86
24–27	588	4	14	23	36	12	364	31	43	61
28–31	223	4	5	10	5	3	140	15	22	19
32–36	243	2	7	28	7	4	144	7	20	24
37 and over	553	14	18	60	23	10	305	17	54	52
Number of infant deaths										
All	3,292	45	73	244	174	73	1,877	125	315	346
All with known gestational age[3]	3,201	45	70	238	173	72	1,840	123	311	329
Under 24	643	6	8	32	57	26	325	22	78	89
24–27	730	6	17	30	50	19	446	38	54	70
28–31	305	6	7	12	10	4	194	18	31	23
32–36	386	2	12	37	15	6	238	12	34	30
37 and over	1,137	25	26	127	41	17	637	33	114	117
Neonatal mortality per 1,000 live births										
All	3.4	3.4	3.2	6.2	5.9	7.4	3.0	2.5	4.0	3.8
All with known gestational age[3]	3.3	3.4	3.1	6.1	5.8	7.3	3.0	2.5	4.0	3.7
Under 24	848.9	*857.1*	*800.0*	852.9	803.0	806.5	854.8	814.8	895.3	843.1
24–27	232.4	*250.0*	233.3	213.0	205.7	179.1	251.0	271.9	167.3	215.5
28–31	37.5	*64.5*	*32.7*	43.5	*18.9*	*26.1*	37.0	57.3	41.7	34.6
32–36	5.9	*3.4*	*6.6*	18.4	*5.3*	*6.8*	5.4	*3.3*	5.9	6.0
37 and over	0.9	1.7	1.2	2.6	1.2	1.5	0.8	0.5	1.1	0.8
Infant mortality per 1,000 live births										
All	4.9	5.0	4.3	9.8	8.2	9.8	4.4	3.3	5.8	5.2
All with known gestational age[3]	4.8	5.1	4.1	9.6	8.1	9.7	4.3	3.3	5.7	5.0
Under 24	883.2	*857.1*	*800.0*	941.2	863.6	838.7	890.4	814.8	907.0	872.5
24–27	288.5	*375.0*	283.3	277.8	285.7	283.6	307.6	333.3	210.1	247.3
28–31	51.3	*96.8*	*45.8*	52.2	37.9	*34.8*	51.3	68.7	58.8	41.9
32–36	9.4	*3.4*	11.3	24.3	11.4	*10.2*	9.0	5.7	10.0	7.5
37 and over	1.9	3.0	1.7	5.6	2.1	2.6	1.6	0.9	2.3	1.9

1 Information on ethnic group is not available for the 514 births that could not be linked to an NN4B record.
2 Chinese, Other Asian, Other Black, Other, and all Mixed groups.
3 Excludes those with low gestational age inconsistent with birthweight, or gestational age not stated, or not linked to an NN4B record.
4 See data quality issues in Methods section.
5 Live births of known gestational age only.
Note: Rates based on less than 10 deaths are in italics

Methods

The same approach data was adopted as that used in analysing the 2005.[2]

Data used in this analysis

Table 8 Birth and death records used in the analysis, babies born in 2006

England and Wales

	Live births	Infant deaths
Birth registration record linked to an NN4B record	668,951	3,272
Birth registration record not linked to an NN4B record	514	20
Totals used in the analysis	**669,465**	**3,292**

The data used in the analysis are routine birth and death registration records, and NHS Numbers for Babies data (Table 8). All birth registration records for babies born alive in England and Wales in 2006 were used. The extract of these records, taken in November 2007, included 669,465 live births. Death registration records were extracted for all deaths under one year of age where the baby was born in 2006 and the death record could be linked to a birth registration record. This extract, taken in November 2008, included 3,292 deaths. The 668,951 NN4B records for babies born in England and Wales from 1 January to 31 December 2006 inclusive, and which could be linked to a live birth registration record, were included in this analysis.

The linkage required for this analysis was carried out in two stages. NN4B records were linked with the 669,465 live birth registration records using the methods developed for the pilot linkage of births in the first quarter of 2005.[5] Subsequently infant death registration records were linked with this combined birth registration-NN4B dataset. Of the 3,292 infant deaths which were successfully linked to a birth registration record, 20 related to the 514 live birth registrations which could not be linked to an NN4B record.

Data quality issues for births recorded as occurring before 22 weeks gestational age

Earlier work on the 2005 data identified data quality concerns regarding births recorded as occurring before 22 weeks gestational age,[2] one-fifth of which were recorded with a birthweight of 2,500 grams and over. This is clinically implausible as it would be expected that these very low gestation babies would have very low birthweights.

Table 9 Infant mortality by birthweight among births before 22 weeks of gestational age, babies born in 2006

England and Wales

Births before 22 weeks gestational age	All	Birthweight (grams)				
		Under 1,000	1,000–1,499	1,500–2,499	2,500 and over	Not stated
Live births	298	196	5	10	67	20
Infant deaths[1]	231	193	3	4	11	20
Infant deaths per 1,000 live births	775.2	984.7	600.0	400.0	164.2	1,000.0

1 All these deaths occurred in the early neonatal period.

In order to investigate these data issues infant mortality by birthweight for babies born before 22 weeks of gestational age is tabulated (Table 9). This shows near universal mortality among babies recorded as being born before 22 weeks with birthweights below 1,000 grams. However babies of this gestational age with birthweights of 1,000 grams and over have much lower mortality rates. It is known that survival is extremely unlikely among such early babies.[6] This strongly suggests that for births recorded as occurring before 22 weeks gestation with birthweights anything but very low, one data item or possibly both were wrongly recorded. For this reason, births (and related deaths) of below 22 weeks gestational age were separated into those with plausible birthweights (under 1,000 grams) and those with implausible birthweights (1,000 grams and over) for this gestational age. Throughout this report the latter group plus those of below 22 weeks and with birthweight not stated are not included as under 22 weeks gestational age. This is the approach adopted in the analysis of 2005 data where further details are available.[2]

Analysis

Information on whether a birth is a singleton or multiple together with information on birthweight, maternal age, marital status/registration type, and NS-SEC is taken from the birth registration data. Marital status/registration type refers to whether the birth was registered inside or outside marriage and, if it was outside marriage, who registered the birth. The NS-SEC is based on fathers' occupation and is therefore only available for births occurring in marriage or jointly registered by both parents. As NS-SEC is only coded for a 10 per cent sample of live births (and all stillbirths), the three class version of NS-SEC was used here rather than the more detailed five or eight class versions.

Information on ethnic group and gestational age comes from NN4B data and is therefore only available for birth registrations which have linked to an NN4B record; these data items are therefore unavailable for 514 live births and their 20 related deaths. The NN4B record asks for the 'ethnic category (baby) as defined by the mother'. This report focuses on the larger and more clearly defined categories, that is, three Asian or Asian British groups (Bangladeshi, Indian and Pakistani), two Black or Black British groups (African, Caribbean), White British, White Other (including White Irish) and an 'All Others' group, which includes Chinese, Other Asian, Other Black, Other, and all Mixed groups. Although the NN4B data specification asks for the babies' ethnic group it is unclear whether in practice it is the mother's or the babies' ethnic group that is actually recorded. This, and the quality of the ethnic group information, is discussed further elsewhere.[4]

The NN4B record asks for gestation length in weeks 'calculated from relevant menstrual data held within the maternity system' although, given the widespread use of ultrasound dating, it is likely that the recorded gestational age will often come from such examinations. More detail on gestational age measurement is given elsewhere.[4,7] All statistics which give the percentage of live births or deaths in a given gestational age range are calculated using only births of known gestational age in the denominator. Births (and related deaths) with gestational age under 22 weeks and implausibly high birthweight or birthweight not stated, are not included as of known gestational age. In line with the World Health Organisation definitions,[8] preterm birth is defined as before 37 completed weeks of gestation, term as 37 to 41 completed weeks and post term as 42 or more completed weeks.

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